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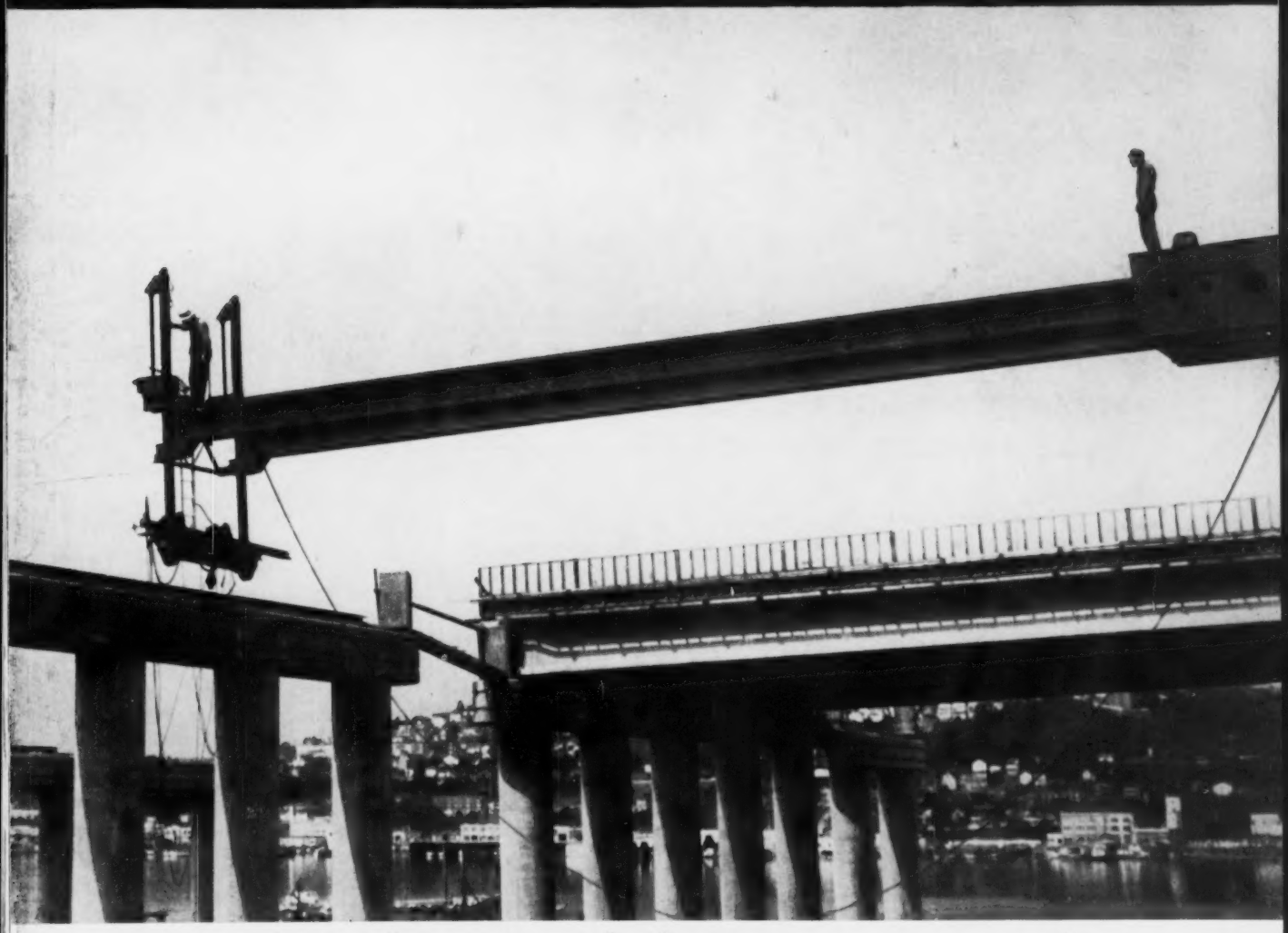

Girder launcher speeds freeway construction p. 34

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25-ton P&H 325-TC in foreground teams up with 40 ton P&H truck crane on missile base job

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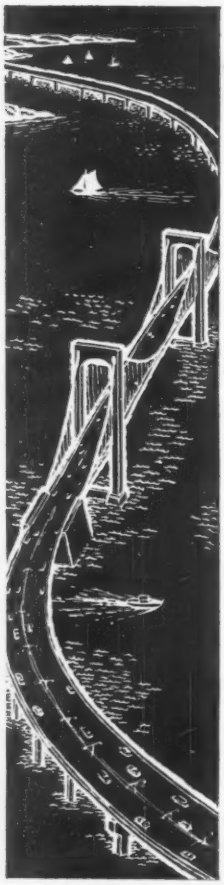

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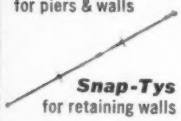

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JOHN W.

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Project: Eufaula Dam, Canadian River near Muskogee, Oklahoma
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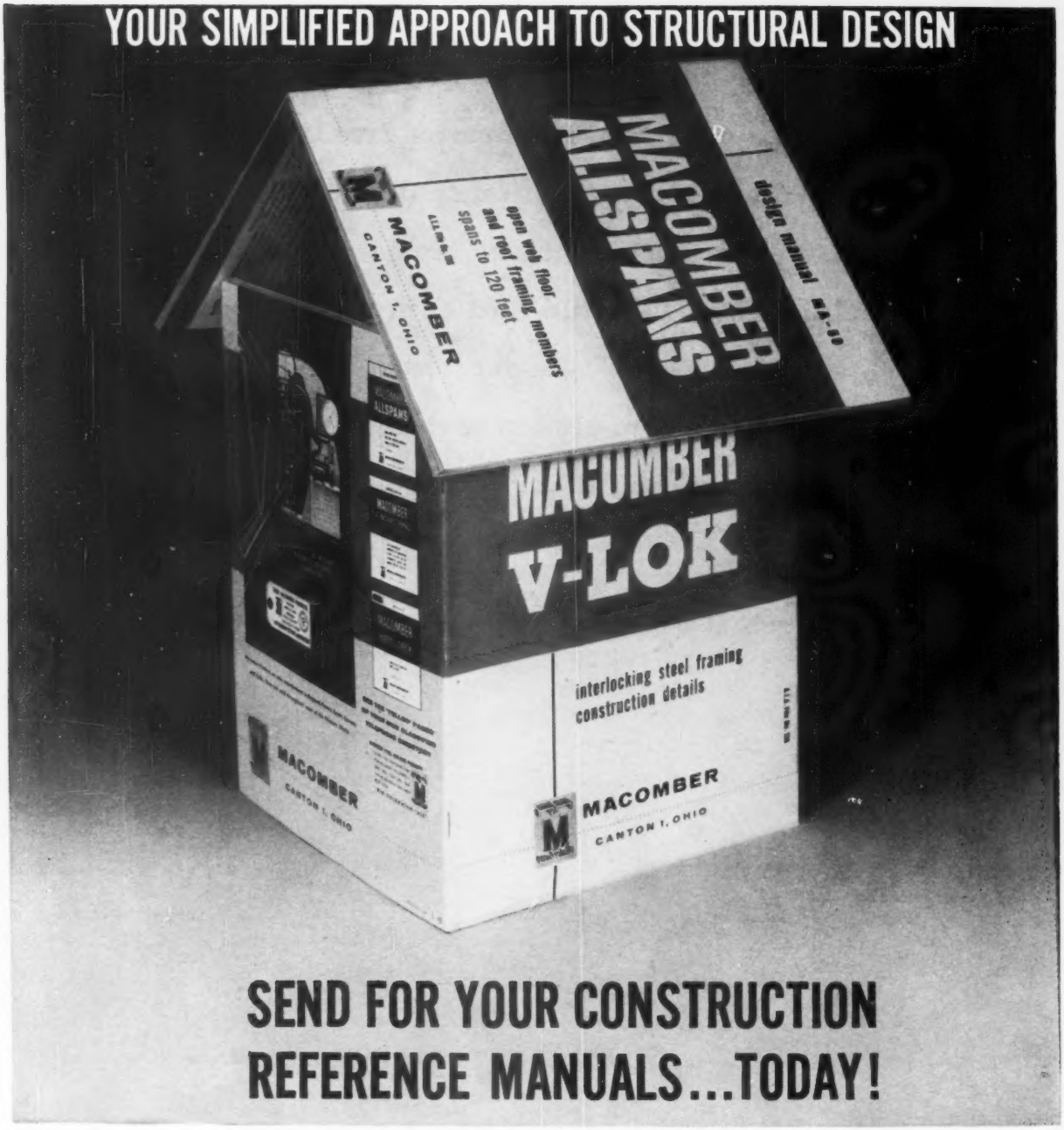

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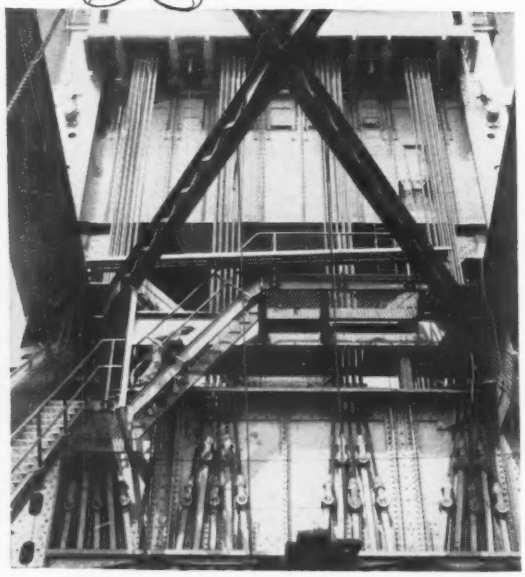

Photo shows how USS Tiger Brand Rope is anchored to lift span with adjustable assemblies to maintain even tension. Ropes travel over power-driven 15-foot sheaves at top of tower.

This mark tells you a product is made of modern, dependable Steel.

This giant 558-foot span weighing 4 million pounds can be raised or lowered 104 feet in about two minutes. Eighty main wire ropes 2¼ inches in diameter and 170 feet long do the job. Each rope has a catalog breaking strength of 215 tons—for a total of 34,400,000 pounds. These USS Tiger Brand Wire Ropes are all 6 x 19 Filler Wire Construction Monitor Grade Prestressed Counterweight Assemblies.

The bridge also has an auxiliary counterweight system that requires eight Tiger Brand Ropes 1⅝ inch in diameter of similar construction but with fiber center. Their total length is 1440 feet. More than 99% of the weight is counterbalanced.

For the messenger cable, 8,450 feet of corrosion-resisting Stainless Steel, Type 304, wire rope was used.

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For more information, call our distributor near you, or write American Steel and Wire, Dept. 1220, Rockefeller Building, Cleveland 13, Ohio. USS and Tiger Brand are registered trademarks.

Staten Island Rapid Transit Railway Company bridge across the Arthur Kill at Elizabeth, N.J. This company is a wholly owned subsidiary of the Baltimore and Ohio Railroad Company. Bridge designed by Parsons, Brinkerhoff, Quade and Douglas, consulting engineers.

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In Defense of Prefab Structures

SIR—As a major manufacturer of prefabricated metal buildings, we consider Mr. Lloyd Weast's letter (ENR June 15, p. 12) an unwarranted attack on a type of structure that has proven its economy, usefulness and recently its attractiveness through customer satisfaction, and increased use in all types of construction.

All our buildings are designed and certified by a registered professional engineer to the standards of the American Institute of Steel Construction, American Iron and Steel Institute, American Welding Society, and Uniform Building Code, with increased loadings as required by local conditions. The design loadings appear on the drawings so that the customer knows the design criteria.

Actually, prefabricated metal buildings have more engineering time spent in their design than any other similar type of structure; and furthermore, it is not beyond the realm of reason that in many instances if the same amount of time was spent on individually designed structures, the cost of engineering would probably exceed the cost of the structure itself.

All modifications to stock buildings are reviewed as to feasibility, safety and ability to carry required loadings. This is true whether the building is sold for customer erection, dealer erection or contractor erection.

As for Mr. Weast's last paragraph, it is the responsibility of the building official to see that all structures (be they pre-engineered or custom designed) meet the requirements of safety and proper design. This certainly is not limited to any one type of structure. I believe everyone realizes that regardless of the material used in the construction of a building or who designs the building, that some structures do not meet any recognized standard. Therefore, it is necessary that proper plan check procedures be established. Improperly designed structures not only harm the public but make it impossible for reputable firms to compete.

WILLIAM A. SONTAG
Chief Design Engineer
Pascoe Steel Corp.
Pomona, Calif.

SIR—Lloyd Elton Weast's shotgun blast (ENR June 15, p. 12) at the manufacturers of pre-fabricated metal buildings deserves a few words of rebuttal. His attempt to link prefab building manufacturers with a "complete lack of respect for building codes, or even recognized minimum building standards of design" is based more, I'm afraid, on emotionalism than on actual facts.

We should all strive for higher levels of professional and business standards and competence among the contractors, material suppliers, building tradesmen; yes, even among the prefab manufacturers. But this applies equally to the architects and engineers, very few of whom do not recognize the shortcomings of their professions. The prefab manufacturers stand in no special need of uplifting exhortation.

As for the problem of proper job-site inspection and control, this is one which the architects and engineers themselves have not yet been able to lick, especially on small projects where the client is simply unwilling to pay for this service in the fee. This is a general problem and has no special application to prefab buildings.

The economies achieved in the prefab metal building designs are the result of years of extensive research and development rather than of any lack of respect for building codes. Most manufacturers have staffs of professional engineers who have devoted years of study to their specialty, and who intimately know their materials and structures.

Many manufacturers have been in operation for 15 or 20 years or more. Modern prefab buildings are the result of a gradual evolvement of buildings of many years ago, with changes and improvements being added every year or two, as the result of research and development, actual field experience, or simply new knowledge.

MILTON A. KARP
Munich, Germany

Who's Responsible for Corruption?

SIR—It is indeed a critical state of affairs when the Engineering News-Record in its honesty and modesty, is obliged to report and comment on the conduct of inspectors, engineers and contractors on construction projects throughout the nation (ENR July 13, p. 96, July 20, p. 126 and June 29, p. 60).

Words fail one, who has worked on both sides of the fence on construction projects since 1905, to describe his disgust and concern with the deliberate thievery mentioned therein.

Rep. John A. Blatnik (D., Minn.) and his committee, for instance, found a scandalous state of inefficiency and graft on federal aid highway work alone in several states across the nation.

What sort of humanistic education do schools hand out to engineering students today? The Ten Commandments, from which all definitions of ethics and principles flow, are still in effect in this, a Christian nation.

To brand, blacklist and discharge the offenders as members of the various associations is a must. The outgoing president of the NSPE told its members at their Seattle convention "to weed out these incompetents and morally reprehensible engineers." Hats off to Mr. Hull.

HARRY W. ZOLPER
Rapid City, S. D.

SIR—Your editorial Proud of Your Industry? (ENR June 29, p. 96) is misdirected. It is a grave matter to place the blame for political malpractices on the construction industry.

True, a great deal of corruption and graft is connected with the construction industry because of the great volume of business and money involved. And what other businesses or professions are obliged to manage on as low a margin of profit?

Is it any wonder that corruption, graft, cheating and swindling are on the rampage when non-productive services and idling are better compensated than those producing wealth?

The construction industry is severely affected by awarding of public contracts to those feeding from the political pork barrel. Competition on these contracts is so severe that the material, labor and management costs barely are covered—forcing constructors to criminal malpractices which did not originate with this industry.

You have used strong language but it should have been addressed to the political racketeers who monopolize and subsidize everything and everybody. It should be obvious by now to everyone that the economy cannot recover without cutting out the political cancer that is consuming the economic body by destroying the freedom of individual enterprise.

G. SZMAK
Industrial Economist
New York, N. Y.

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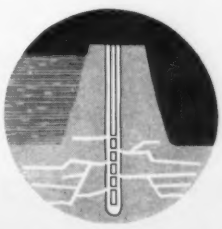

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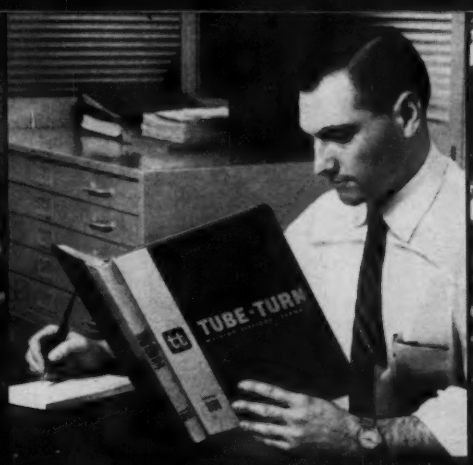

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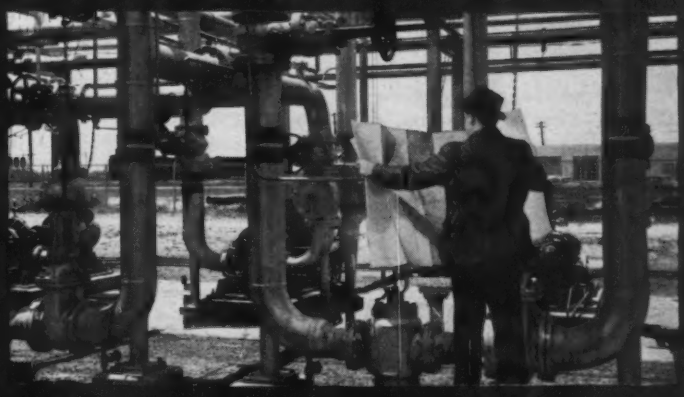

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news and notes from the field

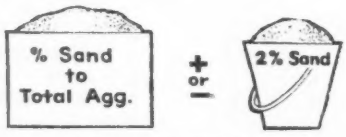
Rules of Thumb for Adjusting Concrete Mixes

Rules of thumb for adjustments in concrete mixes are intended for quick changes when engineering assistance isn't available. They should be used only as temporary adjustments until more accurate calculations can be made. A few of the more common rules of thumb are as follows:

1. Adjusting cement content

For each sack *increase* in cement content, *subtract* 80 pounds of aggregate. For each sack *decrease* in cement content, *add* 80 pounds of aggregate.

2. Adjusting sand for cement change



Adjust sand when changing cement content in a mix. Roughly, 2% should be *added* to the percentage of sand-to-total-aggregate when one sack of cement is taken from a mix. *Deduct* 2% sand when adding one sack of cement.

Reprints of this information are available free of charge. Ask your local Alpha representative or contact the Company's home office.

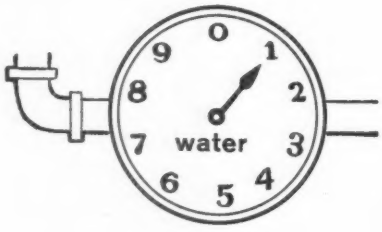
3. Adjusting from regular to air-entraining mix

To maintain the *same strength* when changing from a regular cement mix to an air-entraining mix, *reduce* the water ¼ gallon per sack of cement and sand 10 pounds per sack of cement *for each 1% of entrained air*. The adjusted mix will have a higher cement content.

To maintain the *same cement factor* when changing the mix from regular to air-entraining cement, *reduce* the water ¼ gallon and sand 5 pounds per sack of cement for each 1% of entrained air.

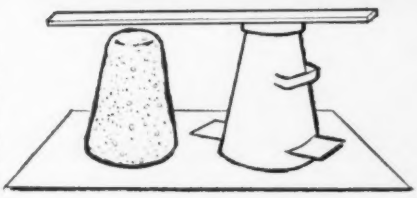
For rich mixes of air-entrained cement, strength reductions should be expected. With lean mixes, there may be no strength reduction or possibly increased strength.

4. For constant yield when adjusting water content



For each gallon *increase* in water content, *subtract* 22 pounds of aggregate. For each gallon *decrease* in water content, *add* 22 pounds of aggregate.

5. To decrease slump



Subtract one gallon of water per cubic yard of concrete to decrease the slump about *one* inch.

6. Adjusting workability of mixes

When a mix is unworkable and harsh, *increase* the sand 50 pounds per cubic yard and *decrease* the stone or gravel 50 pounds per cubic yard. If more sand is needed repeat again but always in 50 pound increments. The workability of an oversanded mix can be adjusted the same way in reverse. Always check yield and strength after this rule-of-thumb has been used. (Alpha's Field Engineers are equipped to check concrete yield on the job.)

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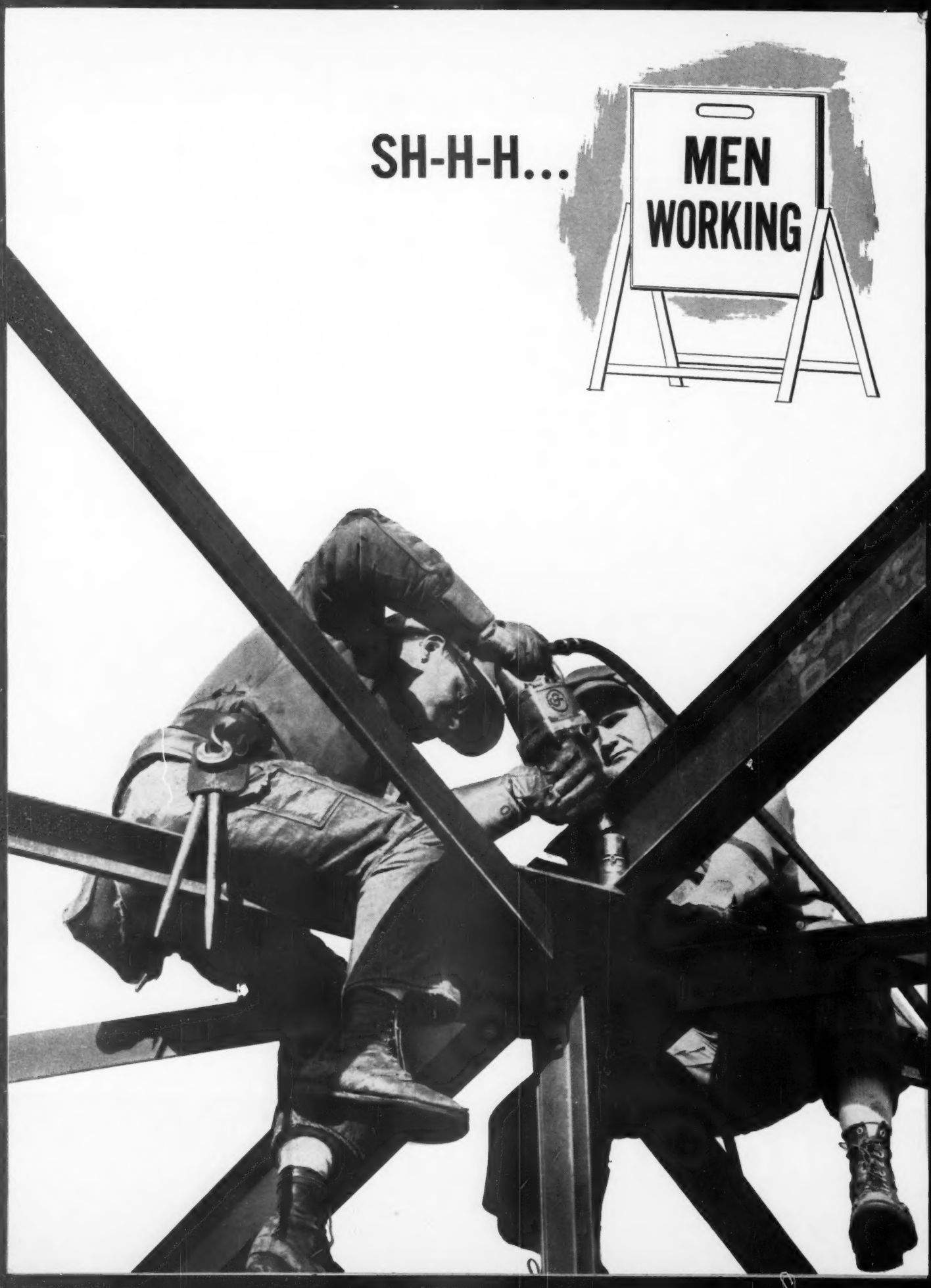
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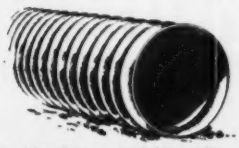
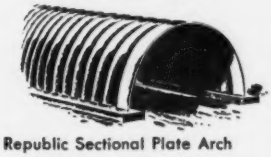
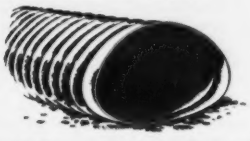


Republic Corrugated Metal Pipe and Sectional Plate Pipe



Republic Sectional Plate Arch



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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

STRIKE—OUT AT THE NARROWS—Builders of the Narrows Bridge have their hands full keeping dirt out of their excavation for the Staten Island anchorage. The 100-ft-deep, block-square hole has been ready for concrete since late June, but a strike of concrete drivers has prevented more than a token core (see p. 79). The unsheeted slopes are in danger. Already more than 100 cu yd has spilled into the forms and over the reinforcing. A heavy storm could cost the contractor the entire season.

CASTLES IN AIR—Three multi-million building projects located on air-right sites were announced last week. A $300-million apartment, hotel and office building project in Chicago will go up over Illinois Central railroad tracks. In New York City a $20-million apartment complex will straddle the George Washington Bridge Expressway. Another New York housing job will go up over New York Central tracks (see p. 26).

CORROSION HITS SEAWATER STILL—Decomposition of 1,700 carbon steel plus in heat exchanger apparatus has forced the Interior Department to shut down for repairs at its million-gal-a-day seawater distillation plant at Freeport, Tex. First of five full-scale federal desalting plants to be completed, it started up in May.

BALLISTIC MISSILE DAMAGE—Missile base projects continue to chew into contractors earnings. Kaiser Industries Corp. reports a first-half loss of $1.1 million resulting from losses of $3.4 million on missile base contracts held by its Kaiser Engineers Division. Raymond International, Inc., reports its net profits in the first half suffered as a result of missile base jobs.

REPAIRS FOR PRESTRESSED BEAMS?—Controversy between Philadelphia and general contractor Sovereign Construction Ltd. follows the city's stop-work order on the $4.3 million, curvaceous Police Administration Building (Oct. 13, 1960, p. 56). Charles G. Day, new head of the Division of Architecture and Engineering, wants the precast concrete structure dismantled because he doesn't believe "defective" prestressed beams supporting precast, exterior bearing walls can be repaired.

PG&E HYDRO EXPANSION—Pacific Gas & Electric Co. last week got a Federal Power Commission license to build an $87-million hydro project on the Pit and McCloud Rivers in California. It includes a 235-ft concrete arch, a 175-ft earthfill, concrete gravity dams 165 ft and 230 ft high, and three powerhouses with a generating capacity of 329,400 kw.

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WASHINGTON OBSERVER

- **Airport aid bill faces a rough take-off**
- **Foreign aid bill meets a rough House**
- **Cold war freezes out a tax-credit plan**

● **Long-term financing for airport construction faces a severe test in Congress shortly.** The Senate has gone along with an Administration plan to let the Federal Aviation Agency commit $375 million over a five-year period, permitting FAA to borrow from the Treasury if Congress fails to appropriate a given year's needs. The House stripped the bill of its long-term borrowing authority, but didn't squabble about the $375 million figure.

Chances are pretty good that the Senate will have its way—that long-term financing will remain in the final bill. Such a provision has been included in recent aid-to-airport bills. House conservatives insisted on returning to year-to-year control of funds in this bill because of their distaste for a similar proposal for long-range financing of foreign aid projects. They don't want to set any precedents.

—

● **The House threw a monkey wrench into the President's foreign aid bill by rejecting the long term loan provision after the Senate approved it.** Now a conference committee is trying to work out a compromise acceptable to the house. It will probably be to give borrowing authority for three years instead of five, although it is doubtful whether the House would accept this much. Another possibility is for Congress to make moral commitments to support a certain amount of aid over five years, but subject to annual review by the appropriations committees.

Mr. Kennedy claims foreign aid cannot be administered effectively unless the government can make commitments over a period of several years to finance long-term projects—and exact economic and social reforms in return from the government receiving aid.

—

● **President Kennedy has ordered another speed-up in release of federal funds for the Interstate Highway System.** The action involves release of $818 million to the states that normally would not be available until October 1. It will permit the states and contractors to take advantage of the rest of the construction season by getting more work under way. Former President Eisenhower started the practice of releasing highway funds early more than a year ago.

—

● **Confusion over Berlin has stalled the tax-credit plan for stimulating business purchases of machinery and equipment.** The version tentatively approved by the House Ways and Means Committee would give companies the right to reduce their federal tax bill by 8% of the amount they spent on purchases of productive equipment. Even if the Committee comes up with a final bill, however, it is too late in the session to expect congressional enactment.

Entire question of taxes thus will be put over until next year. President Kennedy has promised a tax-reform message in January that will cover the entire field. What he comes up with will depend, of course, on the international situation at the time and the budget outlook.

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GSA Gets $212-Million Building Contract

Architects, consulting engineers and contractors can look forward to more design and construction contracts for federal buildings in the coming year than in the past 12 months. Congress last week voted the General Services Administration more construction money for fiscal 1962 than it had for 1961. In addition, prospects for authorization of 33 new projects appeared excellent.

The total GSA construction budget for fiscal 1962, which started July 1, is $212,646,500. This compares with construction funds of $165,441,000 Congress approved a year ago.

In addition, the Public Works committees of both the House and Senate authorized 33 projects, which eventually will cost an estimated $206 million. Construction funds for these will be sought as the various projects reach the construction stage.

GSA supervises construction of federal buildings under two programs: (1) direct appropriations to the agency, such as last week's $212 million, for construction of federal office buildings—post offices, courthouses and customs offices, and (2) so-called transfer funds from other federal agencies, which ask GSA to supervise design and construction of a building for them.

GSA construction policies and programs have not changed materially since the advent of the Kennedy Administration last January.

The new Administrator is John L. Moore, on leave as vice president of the University of Pennsylvania (ENR Feb. 16, p. 24). In that job, he played a prominent part in planning University City, which adjoins Penn and Drexel Institute of Technology in Philadelphia.

The GSA Public Buildings Service (PBS) is headed by Karl E. Wallace and the PBS Office of Design and Construction, by Leonard L. Hunter. Mr. Hunter, a native of North Carolina and a graduate of the University of Pennsylvania, is a professional architect.

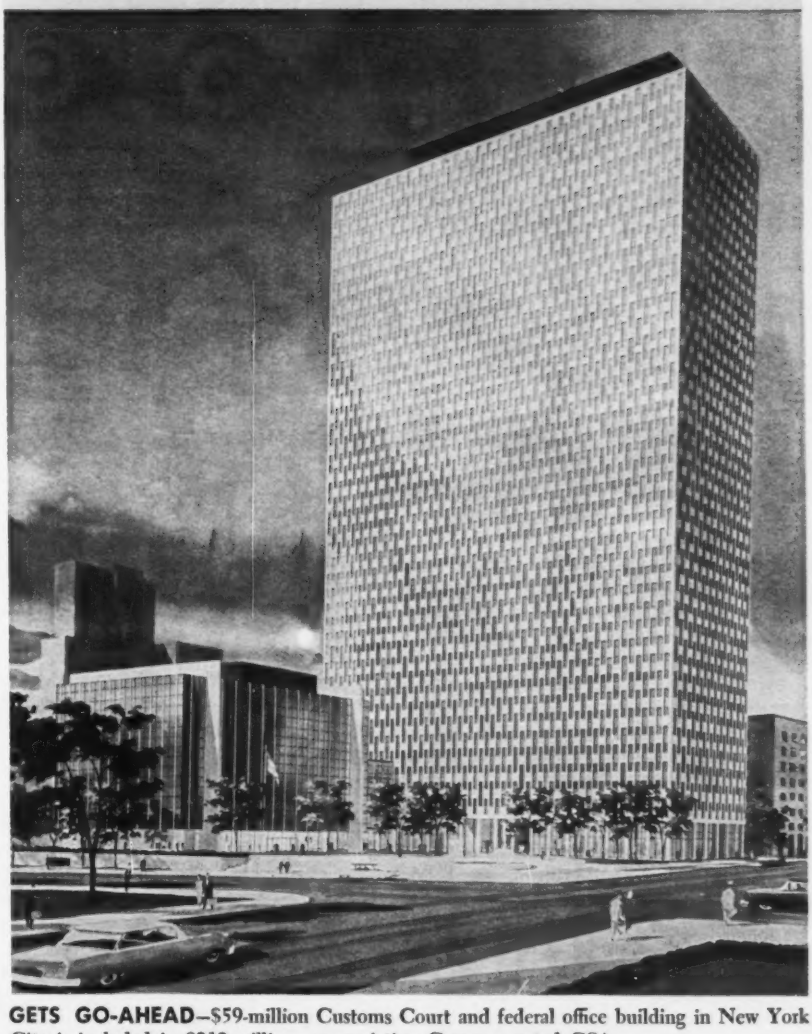
Mr. Hunter's office is the link between private architects and contractors and nonmilitary federal construction projects.

Ten GSA regional offices act as liaison with Mr. Hunter's office and work directly with private architects, engineers and constructors on specific projects. During the next 12 months, officials in these offices will award and supervise construction contracts for the 25 projects involved in the $212-million appro-

Where GSA Construction Money Is Going

July 1, 1961, to June 30, 1962

City	Amount	City	Amount
Decatur, Ala.	$1,315,750	Medford, Ore.	$1,728,050
Los Angeles	27,388,500	Johnstown, Pa.	1,187,500
Los Angeles-Long Beach	2,000,000	Lebanon, Pa.	730,550
Denver	18,145,000	Derby Line, Vt.	267,900
Statesboro, Ga.	538,650	Washington, D. C.	
Winder, Ga.	475,000	GPO Field Plant	1,545,650
Wyandotte, Mich.	402,800	Fed. Bldg. No. 7	23,700,000
Santa Fe, N. M.	2,362,650	Fed. Bldg. No. 8	3,800,000
New York	59,222,050	Chicago	31,293,000
Bryson City, N. C.	753,350	Tupelo, Miss.	789,000
Thomasville, N. C.	327,750	Pittsburgh	20,000,000
Pembina, N. D.	183,350	Dyersburg, Tenn.	901,000
Cincinnati	17,432,500	Montpelier, Vt.	1,258,000



GETS GO-AHEAD—$59-million Customs Court and federal office building in New York City is included in $212-million appropriation Congress voted GSA.

VOTED FUNDS—$18-million court house and federal office building in Denver is slated for construction by GSA. Design of new federal buildings follows current trends.

priation and design and site-location contracts for the 33 newly authorized projects.

The larger of the projects on which construction contracts will be let in the next 10 months or so (see table on p. 21) are a federal office building and customs office in Los Angeles; office building and courthouse in Denver; office building, post office and customs office in New York City; office build in Cincinnati; office building and courthouse in Chicago; office building in Pittsburgh; and an office building in Washington's Lafayette Park, across the street from the White House.

Some of the larger of the 33 projects authorized by the congressional Public Works committees are:

A federal office building at Des Moines, $10,335,000; office building at Louisville, $13,100,000; office building and courthouse at St. Paul, $11,673,000; office building and courthouse at Philadelphia, $42,680,000; office building at Fort Worth, $20,600,000; and Office Building No. 5 in the District of Columbia, $42,000,000.

GSA selected these projects after studies were made by its space management division. This group constantly surveys communities where federal employees are stationed, checking on such things as obsolescence and adequacy of space, costs of rental, etc. On the basis of reports from this division, a project review committee decides which are the most urgent projects, draws up a program for each project and clears it with the Budget Bureau.

These projects then go to the congressional public works committees for authorization, after which GSA seeks site acquisition and design funds from Congress. After the preliminaries, GSA goes back to Congress for construction funds.

Next GSA considers architects and engineers in the area chosen for a new building, studies their qualifications and a PBS selection committee chooses one or more for each project. The designers are given a handbook, "Instructions to Contract Architects and Engineers," which explains operating procedures.

GSA does no actual design work on new construction. But the regional staffs consult constantly with the architects and engineers they engage and review the plans at frequent intervals during the design period.

The regional offices submit frequent progress reports on design to Mr. Hunter, who, with the consent of Mr. Moore, gives the final approval. If design modifications are required, they are made immediately.

Designers are limited principally by construction money budgeted and the requirements that the building be efficient and functional. GSA officials say they do not experiment on design with government funds—but GSA allows designs to follow current accepted trends. Thus, in accordance with local architecture, many "thin" buildings with extensive glass facades are being constructed today in contrast with the old "Grecian temples."

GSA selects contractors as a direct result of competitive bidding. The regional offices advertise for bids in newspapers and business publications when a given project is ready. The regional staffs carry out negotiations, subject to final approval from Mr. Hunter's office.

Architects and engineers supervise most of the construction, in consultation with PBS officials. Payment to contractors is made on a monthly basis in accordance with progress of the project. PBS retains up to 10% of the contract, subject to final settlement.

Contractors must post a collateral bond of 20% of the amount of their bid at the time of submission. The contractor who wins the job must post a 100% performance bond, to protect the government, and a payment bond, based on a sliding scale, to protect subcontractors and materials suppliers.

It would be natural to expect federal buildings to set an example for private builders by including fallout shelters. But this has not been the case.

In 1958, President Eisenhower directed that all new federal buildings contain a shelter, and President Kennedy left the directive in effect. So every year, GSA asks for funds for such shelters for all its projects. And every year, the House cuts the money out of the GSA appropriations bill.

This month Congress voted the Defense Department funds for planning and building shelters in federal buildings.

Not a single fallout shelter has been built in new federal structures built with GSA funds. In contrast, GSA is installing a shelter in a building it is constructing for the Federal Deposit Insurance Corp. Funds for this building do not come from the Treasury, but from payments made to the FDIC from member banks.

U.S. Buys Delaware Pact—If

If the Kennedy Administration and four states can agree on the terms of power sales the Delaware River Basin compact has clear sailing.

The proposed pact, now before the Senate Public Works Committee, calls for an interstate-federal commission to develop the Delaware River Basin's water resources. It entails construction of some 58 dams and reservoirs.

Interior Secretary Stewart Udall says the White House will support the pact —already approved by the House and ratified by the four states, Delaware, New York, Pennsylvania, New Jersey— if these six amendments are included in the bill:

- Hydroelectric power generated at commission projects would be sold subject to preference laws.
- The federal Bacon and Walsh-Healey acts, on wages, hours and other labor standards, would apply on commission projects.
- The pact would not limit federal pollution control authority.
- The commission could not act in conflict with the U.S.; the U.S. couldn't alter a comprehensive plan approved by the federal member.
- The President could delete any provision of the compact's master plan as it might apply to the federal government.
- The federal member would review comprehensive plans every six years and could withdraw federal support at such intervals.

State representatives have agreed to all but public preference, which would give preferential rates to public agencies and cooperatives.

Soils Experts Emphasize Field Work

The more than 1,100 engineers and scientists from 50 countries, who met in Paris last month at the Fifth International Conference on Soil Mechanics and Foundation Engineering, gave more attention to the construction job aspects of their art than to laboratory techniques and testing.

And in doing so they realized a hope long entertained by the honorary president of the conference, Prof. Karl Terzaghi, who, for the first time since 1936, when these international meetings started, could not be present.

The essential steps in making soil mechanics a practical working tool on the job were outlined by W. J. Turnbull of the Waterways Experiment Station, Vicksburg, Miss.:

- Preliminary geological investigations at the building site.
- Sub-surface investigations planned on the basis of the geological information.
- Laboratory tests on good soil samples.
- Application of the results of the preliminary studies to design.
- Control of all construction operations involving soil.
- Development of the instrumentation necessary for observing soil behavior in the completed structure.
- Detailed study of the results of observations upon the completed structure after it has been in service for some time.

Most of these cardinal points were prominently featured in one or more of the eight sessions of the conference.

Slope stability of soils was one of the field problems of soils mechanics to receive attention. A. Trofimenkoff, U.S.S.R., reported on open cuts in the Soviet Union, to depths of over 600 ft. He described one cut a square kilometer in area, 100 meters deep, excavated to 60 meters below the original water table. Soviet engineers, he said, do not agree with the suggestion of observing surface strain on the face of a soil slope to detect potential failure, believing that any warning would come too late. Instead they observe the ground back of the crests of all big slopes. The appearance of initial cracking in this area, they claim, gives them several weeks warning of impending trouble.

Loss of cohesion in clay soils stimulated considerable discussion. Prof. A. W. Skempton of Imperial College, London, the president of the conference, reviewed current thinking on this subject, concluding that cohesion does not decrease with time for all clays. He noted that as early as 1855 Rankine pointed out that cohesion could not be relied upon in soil stability calculations.

He suggested that weaknesses in clays, such as fissuring and other effects of weathering, might be responsible for clays exhibiting in the field shear values lower than those obtained in laboratory tests. He pointed out that this matter can only be investigated in relation to slope stability since in foundations stresses tend to increase rather than to decrease as in cuts.

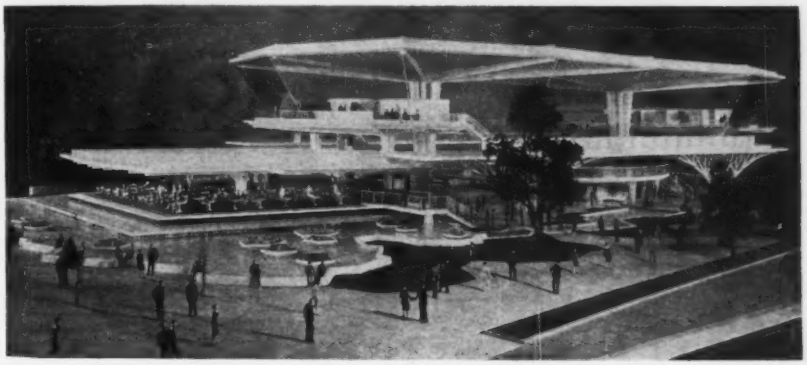
Discussion of piled foundations ranged all the way from detailed accounts of meticulous French experimentation upon elaborate test piles to descriptions of field operations in which actual pile load tests failed completely to agree with anticipated results based on advance tests. L. Zeevaert, Mexico, concluded that possibly engineers were attempting to simplify soil mechanics too much by not taking into account the many complications that affect pile foundation and that make every piling job unique.

The problems caused by loess and similar open-textured soils caused R. Haefeli, Switzerland, to suggest that the new science of snow mechanics might provide a partial answer. He urged that at future conferences snow mechanics be considered since it has close relation to soil mechanics.

Prof. Arthur Casagrande of Harvard University was elected president to succeed Professor Skempton. He will serve until the next conference, which will be held in Montreal in 1965.

In another action the executive committee voted to have a committee develop international definitions in the soils mechanics field to supplement the international glossary of terms that was recently completed. Agreement on some 70 symbols for use in soils mechanics literature was also announced.

The nearly 300 papers prepared for the conference, as well as the discussions that were presented, are available in three volumes from Dunod, 92 rue Bonaparte, Paris 6, France for 350 francs (about $70).



Air is Wall in Fair Building

Gas Inc., a gas industry association, will demonstrate the versatility of plain air in its $6-million exhibit building at the 1964 World's Fair in New York City.

Although gas will heat and air condition the pool-encircled display, a system of air belts will keep a large area of the 40,000-sq-ft building wrapped in comfort.

An air curtain, probably the world's longest, will enclose the building's 200-seat restaurant on three sides; a glass wall will separate the interior side from the exhibit area.

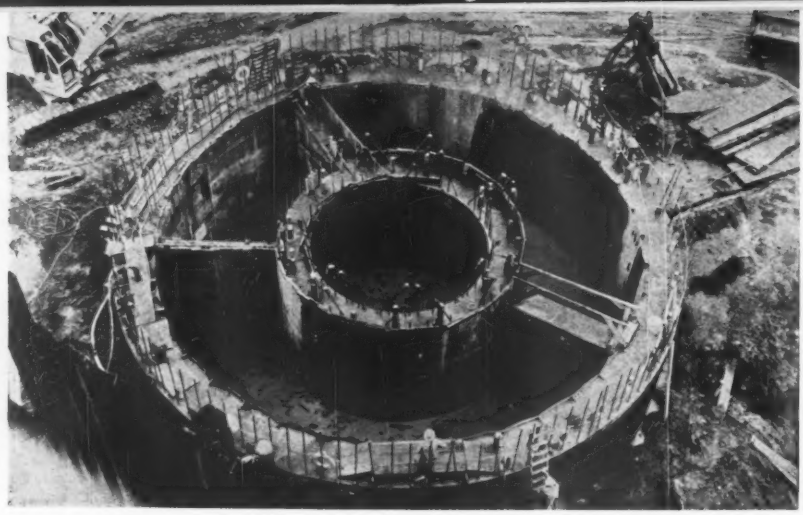
Gas Inc. will make these air walls by shooting a stream of air between ceiling and floor. This continuous flow of air will keep out breezes, rain and insects and will be barely noticeable. Sound, however, will pass through the air walls.

In the exhibit hall, a horizontal belt of conditioned air will restrict air conditioning to the lower two-fifths of exhibition space. This ceiling air-belt will be provided by blowing conditioned air across the exhibit hall at 20 ft above floor level.

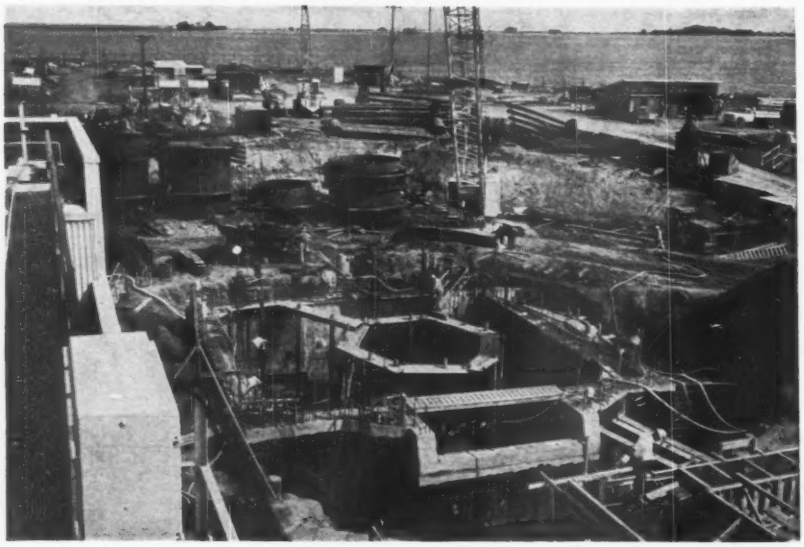
In both the restaurant and exhibit area, distribution systems will pass conditioned air up through honeycomb grills at the floor perimeters. In the exhibit area, the grills will be concealed beneath the indoor landscaping.

Ten feet above the exhibit floor, a 110-ft-dia ring will rotate to give visitors a bird's eye view of exhibits. And high above the main floor, Gas Inc., will have its glass enclosed offices.

Designers are Walter Dorwin Teague Associates. Purdy & Henderson are the consulting structural engineers and J. S. Hamel Engineering, Inc., is the mechanical and electrical engineer. All are New York City firms.



Reactor Tank Sunk to Become . . .



Foundation for Service Building

Gravity, air and water have sunk the enclosure for the country's first underground nuclear reactor 85 ft into the earth. "Cookie cutter" technique was used to keep almost all assembly work on the 60-ft-dia caisson near ground level.

Pacific Gas & Electric Co. is building the 60,000-kw boiling water reactor at Humboldt Bay, Calif., near the town of Eureka. The $20-million plant is expected to go into operation late next year.

Building and sinking the caisson took six months. The whole site was first excavated to 17 ft, then a steel cutting ring was laid in place. Three lifts of concrete, 38 ft, were poured in forms constructed above the ring to give it cutting weight.

High-pressure air and water jets then squirted earth out from under the ring, with pressures varied to make the caisson sink evenly. A conventional clamshell scooped the loose material from the center of the hole. In all, five pours went into the caisson as it sank to its 85-ft final depth.

After sinking 55 ft in the shape of concentric circles, the caisson was altered to rectangular shape. The final 30 ft up to grade will be the foundation walls for a refueling building that will be built over the reactor.

The reactor pressure vessel will be housed within the reinforced concrete inner ring. A water filled space between the two rings will contain and suppress the pressure of escaping steam in case the reactor vessel ruptures. The method eliminates the heavy steel jackets customarily used to house power reactors.

Bechtel Corp. is the project manager for the PG&E plant. Ben C. Gerwick Div. of J. C. Pomeroy & Co. was subcontractor on the caisson job. Both are San Francisco firms.

Lakes From Sewage

Suburban San Diego makes lakes from sewage effluent

San Diego uses reclaimed sewage effluent to change its "bone dry" back country into a land of recreational lakes.

The Santee County Water District (SCWD) opened the first of a string of lakes to be fed entirely with reclaimed sewage effluent.

An earth dam impounds the 11-acre lake in Sycamore Canyon northwest of San Diego.

SCWD, which now serves some 18,000 suburban San Diegans, estimates that at its present rate of growth it will open two such lakes each year. Nineteen lakes are planned for the canyon. They will extend for 3½ miles and be used for fishing, boating and picnic areas. They will range from five to 20 acres in size. One will be chlorinated to make it safe for swimming.

The district handles about a million gallons of sewage a day that receives primary and secondary treatment. Effluent from the plant is pumped into three oxidation ponds in Sycamore Canyon northwest of San Diego. After 45 days in the ponds the reclaimed water is pumped upstream to the head of the canyon and then percolated down stream to the lakes through the sand and gravel floor of the canyon.

Two of the oxidation ponds will later be converted into lakes. The remaining 16 lakes will be developed in dry creeks now owned by a subdivider. The subdivider has been selling rights to extract sand and gravel from the dry creek bottoms so that the sites are partially excavated. SCWD completes excavation and forms the lakes.

Corps to Compare Model, Prototype Data on Dam

The Corps of Engineers is taking advantage of heavy rains to make early studies of hydraulic performance of the spillway crest at Table Rock Dam.

Corps completed the dam less than two years ago. Heavy rains filled its reservoir in record time rather than the 10-15 years it often takes, so the U. S. Army Engineer Waterways Experiment Station will get an early start correlating model test data with actual operation data.

Tests coming up shortly will include measurements of pressure magnitudes at various points on the crest for free overflow and partial gate openings at heads from 22 to 33 ft, and discharge of 1,000 to 15,000 cfs. Pressure fluctuations on the crest will be measured to study the effect of jet pulsations on the structure for certain conditions of operation.

House Lags on JFK Water Council

National coordination of water resources development, a goal of the Kennedy administration, is moving along in the Senate, but pressure for an early September adjournment in the House seems certain to delay it there until next year.

The Kennedy proposal, based on recommendations made early this year by the Senate Select Water Resources Committee, has three major parts:

- A cabinet-level water resources council, composed of the Secretaries of Interior, Agriculture, Army and the Department of Health, Education and Welfare, would be formed to revise, and presumably liberalize standards for federal participation in multipurpose water resources projects. The council would also make a continuing study of water supply requirements, work out principles for water basin planning and pass upon specific proposals of river basin commissions.
- The President would be authorized to set up river basin commissions at the request of interested governors. These commissions, with federal and state representatives, would submit long-range plans to the council.
- Planning by states on a smaller scale would be financed by a $5-million annual grant, available for 10 years, and handed out by the council.

A round of Senate hearings held jointly by the Interior and Public Works Committees brought out the strong support of Western senators, and pointed toward a favorable committee report and the possibility of Senate adoption this year.

The House, however, hasn't gotten to hearings yet, and indications are that all action there will be delayed until the Senate has acted.

Many reservations and objections were on the record by the time the Senate finished its hearings last week, but none appeared to sway such key supporters as Sens. Clinton P. Anderson (D., N.M.) and Robert S. Kerr (D., Okla.).

Opponents denounced the plan as a step toward nationalization of water resources and charged it would weaken interstate compacts. They predicted TVA-type federal control of all water resources and claimed that benefits of planning would be lost in jealousy among federal and agency representatives.

Lack of planning, supporters countered, has fostered jealousy and stubborn loyalty to pet projects. The machinery proposed in the bill, they insisted, will permit reasonable compromise of conflicts that may arise between recreational, fish and wildlife conservation, agricultural, industrial and energy uses.

1963 Highway Funds Apportioned

The Commerce Department has apportioned $3,093,750,000 of the $3,325,000,000 to go to the states for highway construction for the year beginning next July 1, fiscal 1963.

The division includes $2.4 billion for the Interstate System—the full amount authorized by this year's highway bill—and $693,750,000 for the regular (ABC) federal aid program for primary, secondary and urban roads.

The new highway bill authorized $400 million more for the Interstate System for fiscal 1963 than was authorized in the current fiscal year. The $2.4 billion is also $200 million more than the maximum authorization under the old law.

For the ABC program, the Department has delayed apportioning 25% of the full $925 million authorization until the Post Office Department is able to report post road mileage, an element in apportioning, as of June 30.

When this information is complete, Commerce will update the apportionment. For the $693,750,000 now split up, last year's post road mileage information was used.

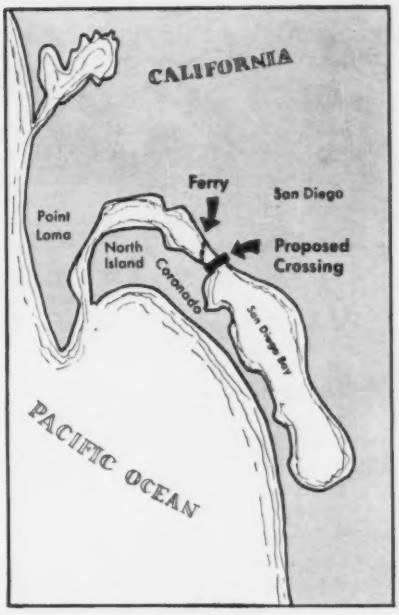
This sum is divided into $312,187,500 for the federal-aid primary system; $208,125,000 for the federal-aid secondary system and $173,437,500 for urban extension of the primary and secondary systems.

After apportioning ABC aid according to the established formula of population, area and post road mileage, the Department made two adjustments that resulted in increases for half the states and decreases for the other half.

The first of these adjustments takes account of some revisions in 1960 census data. The second reflects an opinion of the U.S. Comptroller General that apportionments for fiscal years 1957 through 1961 were made erroneously on the basis of post road mileage data for the year before the apportionments were made, instead of on the basis of data for that year.

The adjustments range from a loss of $669,315 for Michigan for fiscal 1963, to a gain of $1,613,603 for California.

Apportionment doesn't mean actual release of funds to the states, since "contract control" is still in effect (see p. 19).



Try Again for Long-Sought San Diego Bay Crossing

The eighth and probably the strongest attempt to span the ¾-mile stretch of San Diego Bay that separates San Diego and Coronado is gathering momentum. Coronado and North Island form a bump on the end of a long finger of land that shields the bay from the Pacific Ocean.

Increasing pressure from workers at the North Island Naval Air Station and from Coronado businessmen appear to be breaking down traditional opposition from Coronado residents who want to maintain the relative isolation of their community.

Ferry boats operated by the privately-owned San Diego Transit System now serve the area. Coronado and North Island are accessible by road, but the route is circuituous. There are about 6,000 commuting workers to North Island.

Spurring renewed interest in a crossing is a $565,000 appropriation by the 1961-1962 California state legislature for studies and preliminary design. Coverdale and Colpitts, New York City consultants who assisted the California Division of Highways in a 1957 study, will work on the new study. State highway crews will do some field work, such as traffic surveys.

The 1957 report, which will be the basis of the new survey, recommended either a two-lane tube or a four-lane, high level bridge. At that time, the toll tube was estimated to cost about $32 million. A steel cantilever bridge with 200-ft navigational clearance was estimated to cost about $2 million less.

Construction could begin without approval of any of the communities involved.

Around the World . . .

• **Housing takes to the rails**—Amalgamated Lithographers of America plans a $250-million housing complex for New York City's west side, over the New York Central's railroad tracks. Three 41-story and six 47-story apartment houses will rise from a 10-block platform bordering the Hudson River. Litho City will offer middle-income housing to 25,000 persons at $26 to $36 a room.

• **To handle jets**—El Salvador will use $4.3 million in loans from the Export-Import Bank and the Development Loan Fund to adapt Ilopango Airport at San Salvador to jet aircraft.

• **They'll get the word**—The Connecticut Turnpike will have six electrically controlled signs to warn drivers of dangerous conditions ahead. Each sign will be 8 ft by 12 ft with three diagrams using incandescent lamps and capable of displaying 1,800 different combination messages.

• **The last step**—The California Division of Highways has called for bids on the final 1.8-mile section of the 94.5-mile San Diego Freeway. Two years will be required to complete the project.

• **New U. K. airport agency**—Great Britain will set up a new authority to own and manage the United Kingdom's four international airports on a commercial basis. The authority will also plan, build and manage any future airports and would be responsible for any international heliport built in central London.

• **Education for the future**—The Johns Hopkins University has changed the name of its School of Engineering to School of Engineering Science to indicate a different approach. Rather than concentrating on practical engineering, the school emphasizes basic science which its students then apply to the growing complexities of modern technology.

• **Tandem-dam project begins**—Initial construction, a $1.8-million road relocation job, was awarded at Green Peter and Foster reservoirs in Washington. The $72.3-million Middle Santiam River project involves two dams—a 327-ft-high concrete-gravity structure and a 126-ft-high re-regulating earthfill, seven miles down stream.

• **Poison in the ivy**—Charging that mediocre architecture is spoiling some of the most beautiful parts of the Princeton University campus, an alumni organization called the "Poor Princeton Society" is campaigning for "great architecture" at the university. The group approvingly quotes two critics who call the architecture of recent Princeton buildings ". . . a weak set of reminiscent compromises . . . however much it tried to be all things to all men."

• **Catching up fast**—Soviet Union reports construction under way in western Siberia on the world's largest steel rolling mill. But it gave no precise location nor estimated production.

• **No funds for shelters**—Harris County, Texas, is sending a delegation to Defense Secretary Robert McNamara to ask for $8.7 million to add a 150,000-person underground shelter to its huge, domed sports stadium. Neither the Defense Department nor the Office of Civil and Defense Mobilization has money for loans or grants for shelters.

• **Tunisian dams**—A $27.8-million aid agreement between Russia and Tunisia reportedly involves establishment of a technical institute and construction of three dams on Oued Sedjenane, Oued Kessap and Oued Djoumine.

• **A-power afloat**—The Martin Co., Baltimore, will design, build and test for the Army a floating 10,000-kw nuclear power plant to act as an emergency power source for coastal cities and the military installations. Total price will be close to $17 million.

• **Morocco-bound Russians**—The Soviet Union will build a $20-million shipyard for Morocco's port of Tangiers. The yard is part of an over-all improvement plan for the port.

• **Double exposé**—The READER'S DIGEST will carry another exposé of Interstate highway construction scandals in the fall. It will be a summing up of testimony before the Blatnik Public Works Subcommittee.

• **Long arch opens**—Great Britain has opened to traffic the Rudnes-Wincorn Bridge, third longest steel arch in the world (1,082 ft). It crosses the River Mersey and the Manchester Ship Canal in western England.

Suburban Counties Join Philadelphia's Transit Plan

Philadelphia and four suburban counties (Bucks, Chester, Delaware and Montgomery) have signed a compact to extend the city's subsidized commuter railroad service to the suburbs.

The signing represents another step in the city's long-range plan for improved transit facilities (ENR Oct. 13, 1960, p. 46). The plan has been in operation about two years. Within the city limits six commuter lines are now operated by the Passenger Service Improvement Corporation.

First phase of the integrated city-suburban transit plan is expected to be a cooperative project on the North Penn branch of the Reading Railroad. This line serves commuters from Montgomery County and parts of Bucks County. The program later will be extended to other lines operated by the Pennsylvania and the Reading railroads.

The program also may include feeder bus lines and highways to fit into a regional transportation plan.

Solicitors of the counties signed the agreement, which provides for a committee made up of two representatives from each of the five counties. Sponsors of the agreement believe it is the first of its kind in the U. S.

While hoped-for federal aid is an important part of the over-all program, it will move into operation with funds advanced by the five counties.

Company Plans Shelters For Groups of Families

A nonprofit corporation to construct cooperative radiation shelters has been formed by nuclear scientists at Lawrence Laboratory, Livermore, Calif.

Their company, Survival Associates, Inc., has taken option on six acres of land near town, and hopes to begin construction this fall. Ultimately, as many as 1,000 families could be sheltered on the property, at a cost of $1.5 million

Alameda County Planning Commission has agreed to change zoning regulations to permit shelter construction anywhere in the county. When this move is accomplished, probably by September 1, county supervisors say they will grant a construction permit.

The group plans to tunnel shelters 3 ft underground. Each family will have a private room 7 x 8 ft, and each shelter unit will house from eight to twelve families. Families in each unit will share an additional common room 10 x 36 ft, plus cooking and sanitary facilities.

Cost per family is expected to run about $1,500. Participants will have to make individual financing arrangements, since the corporation is unable to make loans and FHA loans are not applicable to common shelters.

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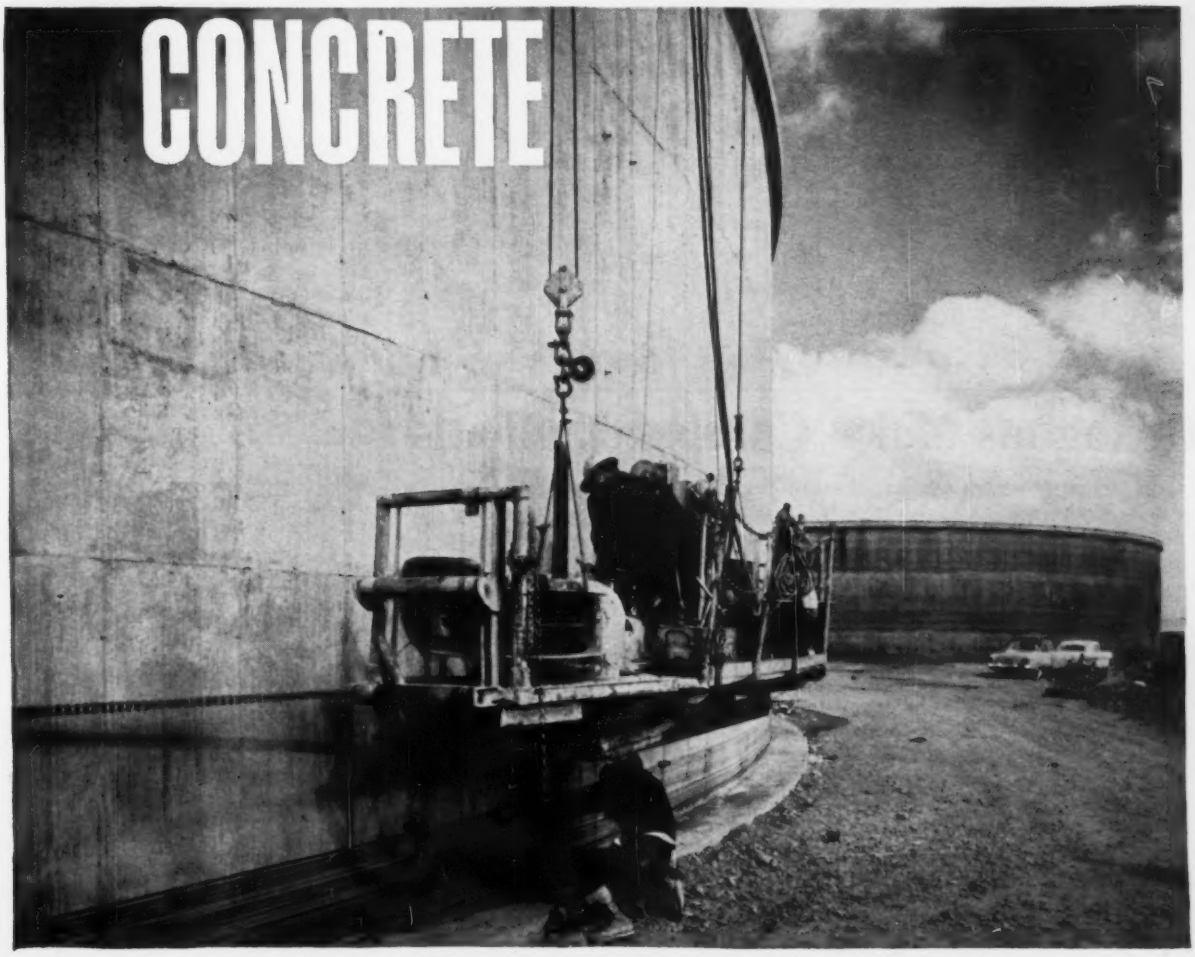
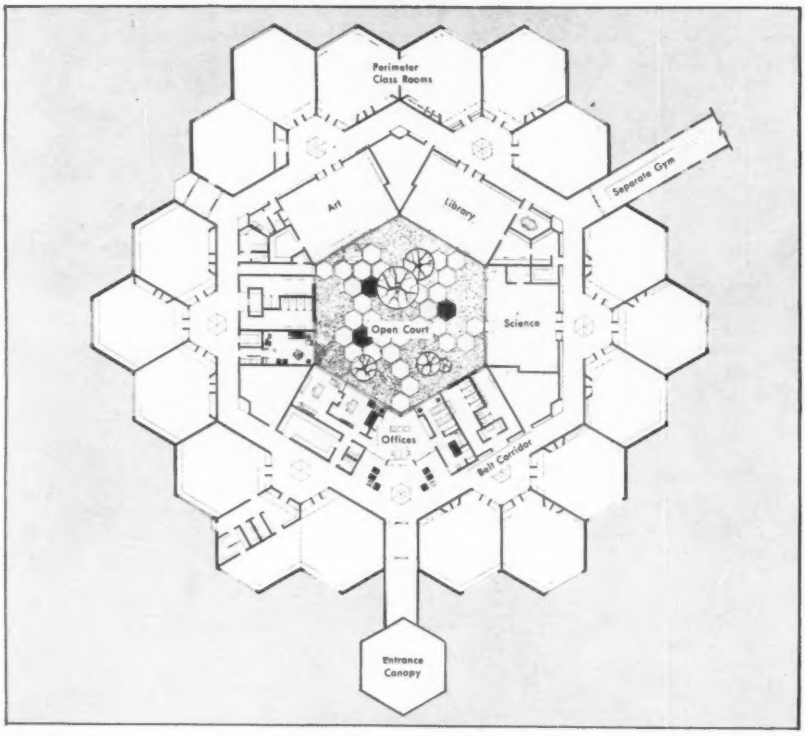


Designers Find That Circles . . .



Hexagons Make Compact Schools

The eternal quest for efficient classroom layout has led some architects to replace conventional rectangular layouts with circular and hexagonal plans. And concurrently with the pioneering architects' work, investigators at Stanford University are studying the economics of air-conditioned circular school buildings.

Two school buildings now under construction have compact layouts provided by circular and hexagonal plan shapes with no additional construction cost.

• **Curves and slopes**—For the North Carolina State College campus in Raleigh, architects Hollaway & Reeves designed a three-story circular building with tilted floors.

Unit cost figured either on an area or pupil basis about equals the cost of a conventional rectangular building layout, according to the architects.

The $2.2-million reinforced concrete structure will have three stories of 206-ft diameter built on stilts. The typical floor has an outer flat rim with offices and stair wells located at the perimeter and an adjacent interior corridor. Classrooms occupy a ring of about 40-ft radial width, sloping down to an inner ring containing a corridor, a ramp and washroom at the building center.

Ramps trisecting the classroom wing at 120-deg intervals connect the inner and outer corridors.

The tilted, pie-shaped classrooms will improve the visibility and hearing of students seated at the rear corner seats of large lecture rooms. Although the circular building costs more than a rectangular building on a unit area basis ($16 per sq ft vs. an average of $14.50 per sq ft) the circular design reduces the area required per student.

An open space beneath the building will permit rapid dispersal of the students during class changes. Two centrally located ramps, each 12 ft wide, will offer quick entrance and exit.

The building will be faced with limestone. Air conditioned throughout, it will be heated from the college's central steam heating plant. Mechanical equipment will occupy the basement of the building's central core.

Architects Hollaway & Reeves and structural engineer Ezra Meir & Associates are from Raleigh. General contractor is T. A. Loving & Co., of Goldsboro, N. C.

School authorities hope to have the building ready for occupancy in time for opening of classes in September.

• **Hexagons in a hexagon**—In Detroit, architects Meathe, Kessler & Associates imposed an over-all hexagonal pattern on 18 hexagonal classrooms around the periphery of a one-story elementary school.

The low bid came to $16.07 per sq ft, indicating that the design has merit from a cost as well as operating point of view. Including site, equipment and fees, the school's total cost will be $750,000.

The main part of the school measures about 200 x 225 ft. The classroom elements are not regular hexagons; an elongated portion of each room points to a central corridor where groups of three rooms open together on a widened corridor section. The corridor, tracing a hexagonal path, surrounds an inner group of offices, rooms and service areas that face on an open interior court.

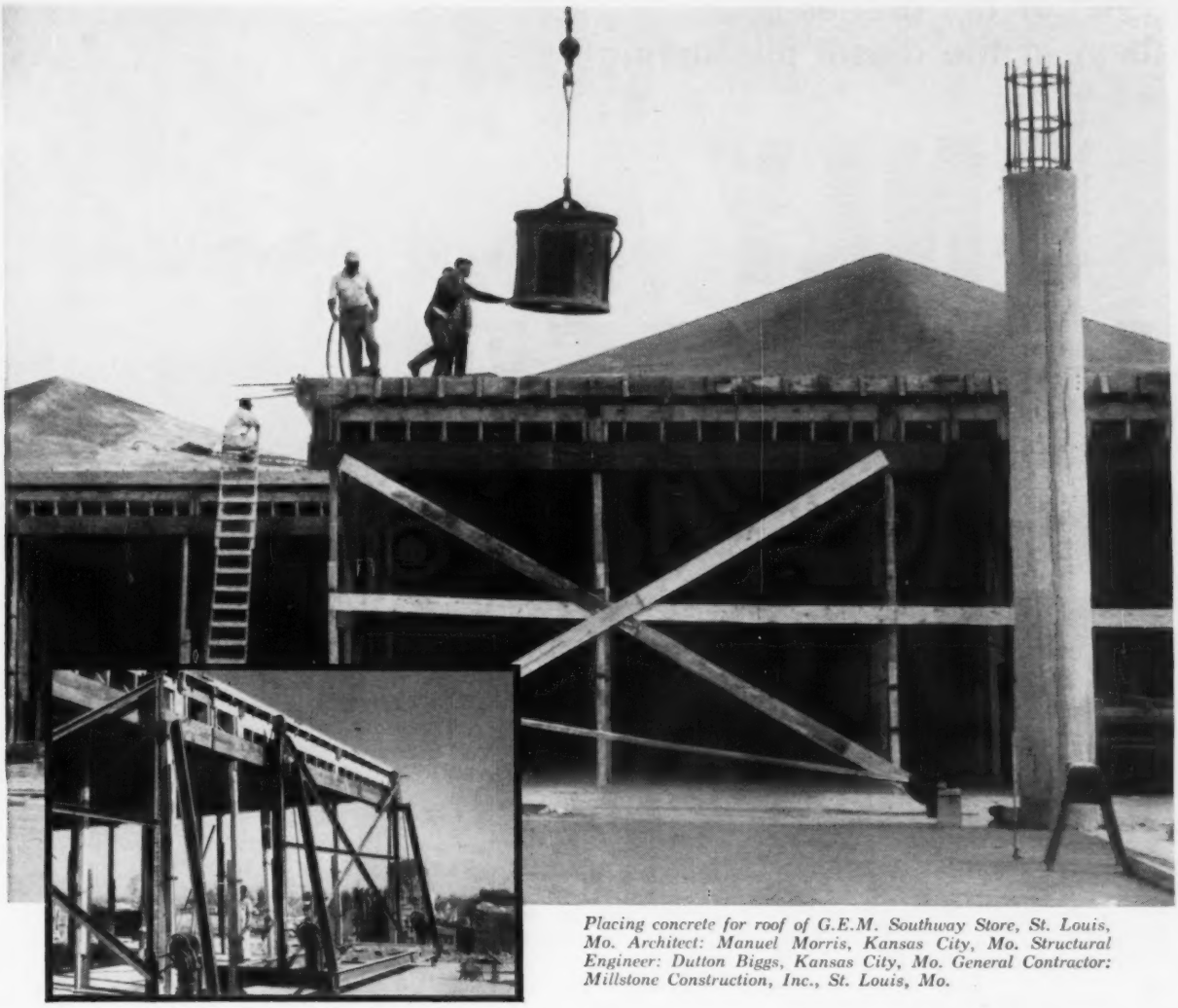
Individual classrooms will have shallow-peaked concrete roofs cast in place on wood forms. The corridor and inner rooms will be roofed with metal deck on steel framing.

The only detached part of the school is a combined gymnasium, music and mechanical plant building. It's hexagonal, too, and linked to the main building by a 50-ft enclosed walkway.

R. H. McClurg Associates, Inc., Detroit, is structural engineer. Darrin & Armstrong, Inc., Detroit, is the general contractor.

A hexagonal-shaped school near Kent, Washington, clusters the classrooms in groups of six around a central activities area. This arrangement gives each grade a degree of autonomy and still provides easy access between the various units of the building complex.

Architects Waldron & Dietz of Seattle designed the project.



Placing concrete for roof of G.E.M. Southway Store, St. Louis, Mo. Architect: Manuel Morris, Kansas City, Mo. Structural Engineer: Dutton Biggs, Kansas City, Mo. General Contractor: Millstone Construction, Inc., St. Louis, Mo.

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Only 6 weeks needed to roof 120,000 sq. ft. store with concrete hyperbolic paraboloids

In the building of the new G.E.M. Southway Department Store, St. Louis, doors opened for business just 85 working days after award of the construction contract. A major reason for the record-time completion of this one-story, one-area shopping center lay in the concrete shell roof.

The roof is composed of 50 reinforced concrete hyperbolic paraboloids. Each of these umbrella-shaped shells is supported by a 24-inch diameter concrete column. Through the efficient re-use of only 5 sets of forms, sizable savings in both time and labor were effected. All 50 shells, each 47½ ft. square and 2½ inches thick, were completed within 6 weeks.

Construction of the hyperbolic paraboloids was done in rows. Thus, masonry, plastering and other trades began work as soon as a row was completed.

This is another good example of the way improved techniques have made shell roof designs economically practical for structures of all types and sizes. No wonder structurally strong concrete is the choice of more and more engineers and builders! Write for technical facts. (Free in U.S. and Canada only.)

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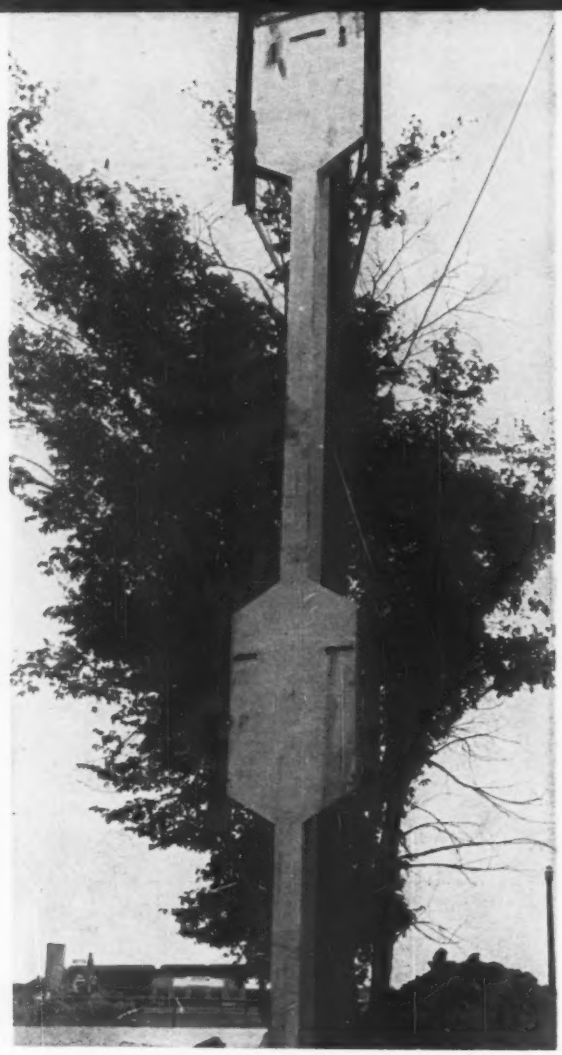
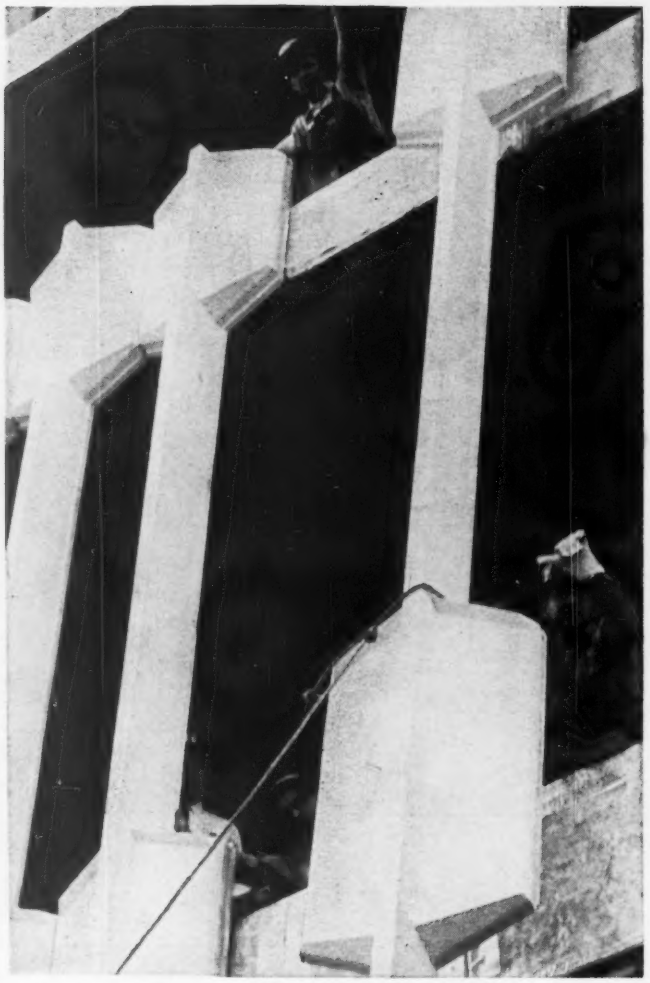




Panel, two stories high (left), when attached to building, lines up hexagons with floors.

Precast 'Lollipop' Panels

Precast concrete curtain walls and a double-slab floor system add to the novelty of design of Detroit's 32-story, air-conditioned Consolidated Gas Building.

With the welded steel frame topped out, workmen are bolting precast prestressed concrete panels to it, leaving slim, hexagonal openings for windows (ENR July 9, 1959, p. 26). Farther up the building, carpenters and laborers are finishing the floors, which sandwich a 6-in.-deep air-distribution plenum between the structural slab and separate floor fill and finish.

• **Detroit Gothic**—Individual wall panels stand 24 ft high (two stories) and look very much like "double lollipops," a term coined by the designers. A mullion section 6½ in. wide forms the stem of each unit. Wide hexagonal spandrel panels at the top and middle account for the lollipop term. Thickness varies from 4 to 7 in.

Two panels, bolted side by side, frame a window in each of two stories and form the spandrels above them. Neoprene gaskets are placed between the units and the joints calked with silicone rubber. Stainless steel frames will hold fixed, gray, glare-reducing glass in the 2x10-ft hexagonal openings.

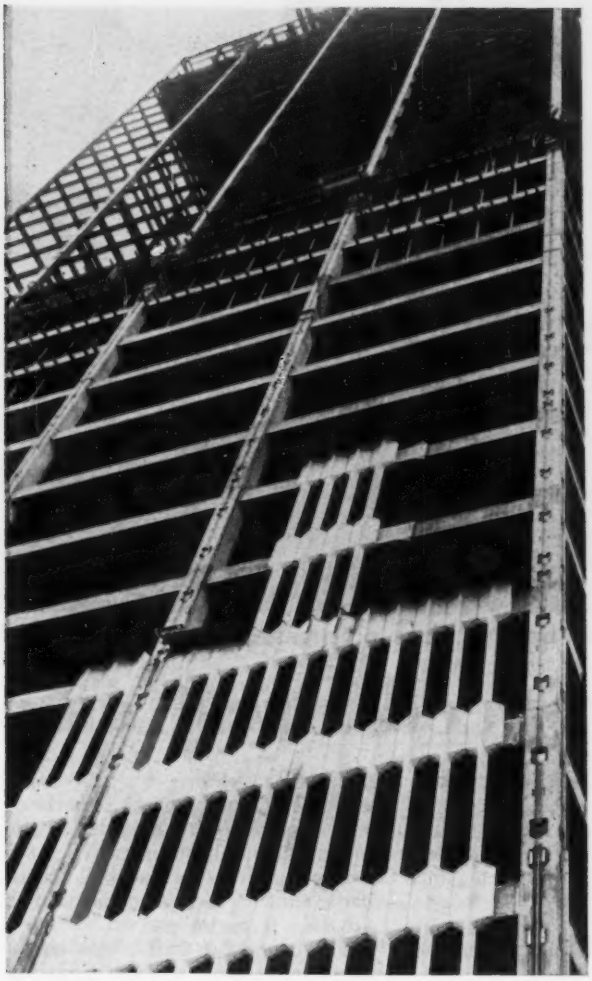
With mullions extended above the roof parapet and below the second floor at lobby level, the hexagons will give the building a strong touch of Gothic.

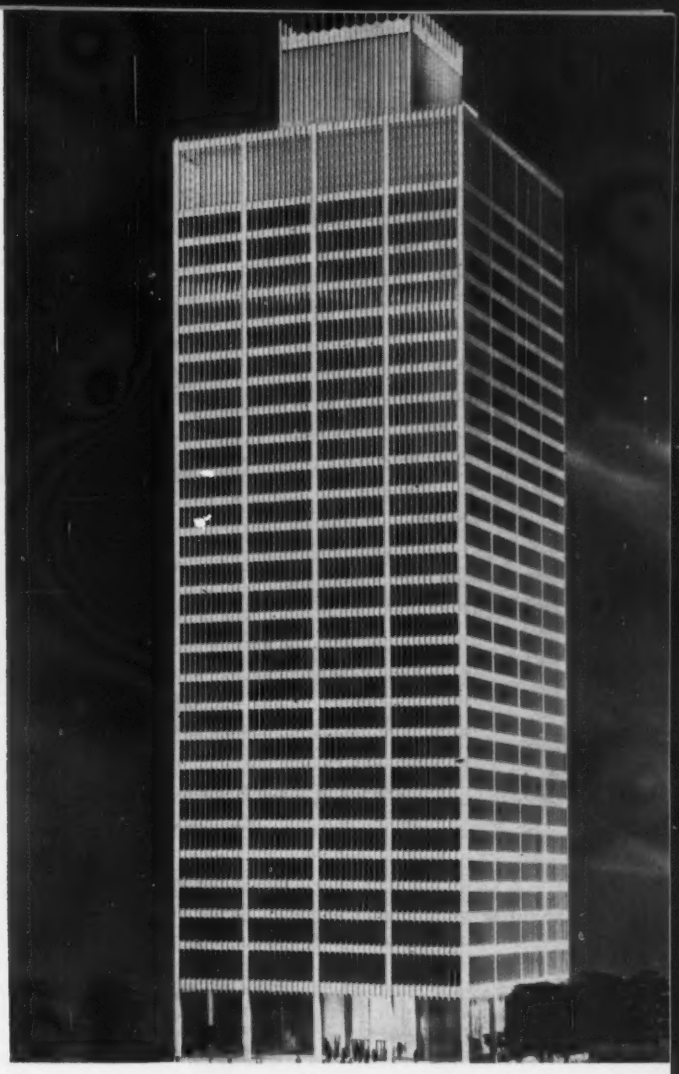
White quartz aggregate and white cement give the panels a striking appearance. The panels are brought to Detroit by truck from Salt Lake City. There, Otto Buehner & Co. is producing the panels from white quartz quarried in northern Utah.

Each panel is prestressed with two ⅜-in.-dia cables. The concrete was designed for a 28-day strength of 8,300 psi, but cylinders have tested up to 10,000 psi at 28 days. With the stiff mix used, Buehner's workmen have to place the concrete with five vibrators operating at once in the steel forms.

The men trowel a slick surface on the exposed interior face of each panel after it is vibrated. In place, the interior face looks just like a plastered wall. It will be finished with paint.

Panels are wrapped in burlap as soon as they come out of the forms. After a steam and 7-day wet cure, the burlap is removed and finishers brush the exterior face with muriatic acid to expose the quartz aggregate. After a neutralizer and water bath, the panels go into polyethylene wraps for 30-day storage before shipment to the site. They are sprayed twice with silicone water repellent—once after casting and again after installation.





The hexagons and stems shape window openings (left), give 32-story building Gothic look.

Enclose Tall Office Building

• **Combination structure**—In addition to the precast walls, the building's welded steel frame supports reinforced concrete waffle slabs spanning about 30 ft.

The waffle slabs rest on steel girders butt welded directly to the columns. Design tolerance was only plus or minus $\frac{1}{8}$ in. for the connections. Steel butt plates were used in these connections when tolerances were exceeded. The unusual floor construction did not permit use of the conventional connection angles.

Typical steel columns are fabricated box sections composed of an H-section with flange-to-flange side plates. Because the columns are slim, thickness of these plates is as much as 4 or 5 in. in the lower stories. At street level, the columns rise unbraced, like stilts, for 30 ft to the second-floor level, but their outside dimensions, including precast concrete jackets, measure only 28x28 in.

Reinforced concrete waffle slabs have 28-in.-deep ribs. Grid size is 4 ft 8 in., the building standard module. Enameled steel grills sit on aluminum channels directly beneath the waffle slab, from which fluorescent fixtures hang.

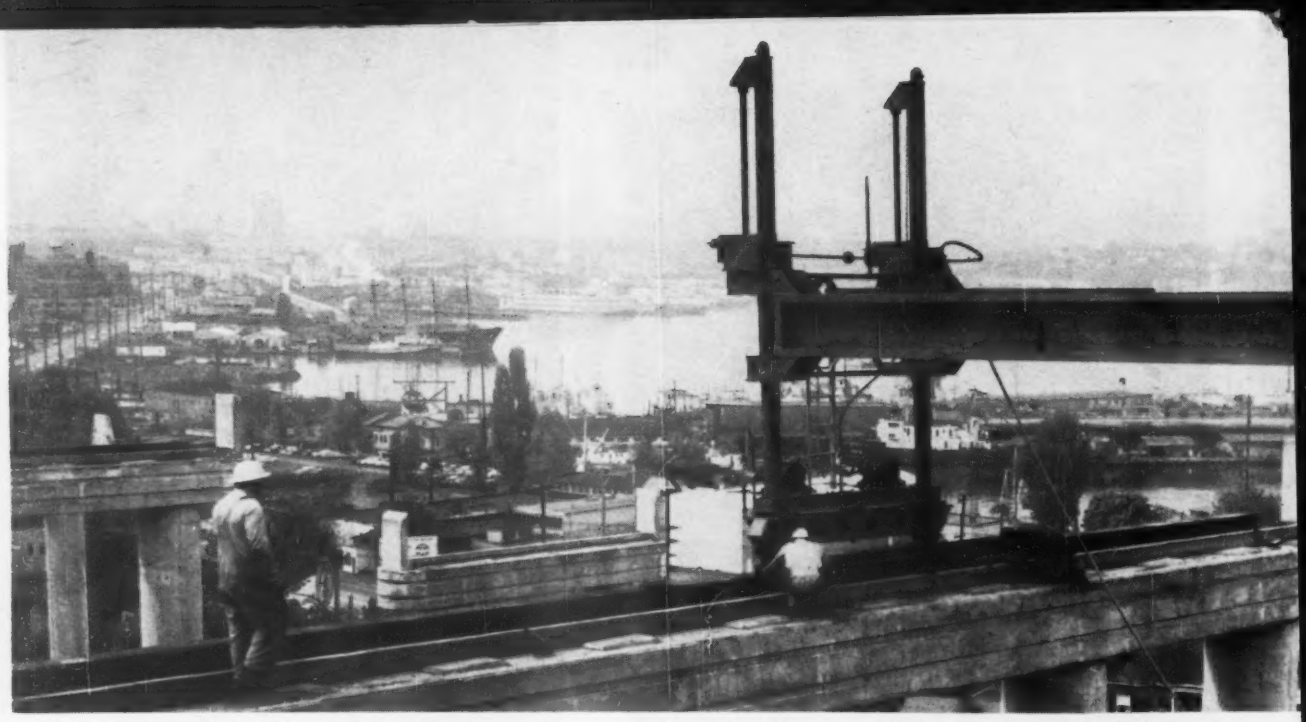
• **Breathing space**—Actual slab depth is 3 in. Above this, there is a $6\frac{3}{4}$-in. void for air distribution. The top part of the plenum is shaped by corrugated metal forms resting on the flanges of hat-shaped, pipe-supported wiring raceways. There is a $3\frac{1}{4}$-in.-deep fill and finish over the metal forms. (A-E Floor of Granco Steel Products Co., St. Louis, Mo.)

After the supporting raceways are down and before iron workers place the metal forms, mechanical crews lay out vertical baffles on the structural slab to form air ducts to interior and exterior zones of the floor and to provide return-air passages.

Around the perimeter of each floor, the outer three modules—a strip 14 ft wide—get air from below-window units. Interior zones receive air from ceiling diffusers extending through the structural slab and hung ceiling.

Central mechanical equipment is located at the top of the building. Each floor will have a complete air-handling system of its own with cooling coils, outside air intake, and exhaust ducts and filters. All water-chilling machines will be connected in parallel to the main supply and return piping, which feed the under-window units.

Smith, Hinchman & Grylls, Detroit engineers, and Minoru Yamasaki of Birmingham, Mich., designed the Michigan Consolidated Gas Co. headquarters building. Bryant & Detweiler, Detroit, is the general contractor.



Telescoping launching girder lands on the next bent to place prestressed concrete girders of an

Special Rigs Speed Prestressed

Two ingenious devices—one a 50-ton, 109-ft-long launching girder costing half as much as a large crane, the other a ½-ton lifting collar—are proving to be nearly worth their weight in gold to the builder of a $4 million elevated section of the north-south freeway in Seattle, Wash. (ENR Mar. 2, p. 38).

The steel launching girder spans from 82 to 92 ft between pier bents to place 27½-ton prestressed concrete girders. There are 973 girders in three parallel structures 2,727 ft long.

The launcher places the 2-x 4½-ft concrete girders on bents as high as 77 ft from the ground.

The launcher cuts the cost of girder placement in half by eliminating two cranes, reducing size of the crew required and making all-weather operation possible. The contractors—joint venturers Rumsey & Co. and Morrison-Knudsen Co., Inc—expect the launcher will more than pay for itself on this single contract. And it is designed to handle longer and heavier girders expected to be used in other sections of the $175 million freeway.

The contractors use the friction-type lifting collars to handle prestressed 4-ft-dia cylindrical pier columns that support the girders. The collars also support working platforms and forms for the pier bent girders.

• **How the launcher works**—The launching rig works from a previously cast section of deck, telescoping out to the next bent. Main structural elements are twin, parallel 2x4-ft box girders made from A-7 steel plate. Top and bottom plates are 1 in. thick, with ⅜-in. side plates. The girders are spaced 9 ft 9 in. c-c and are tied together at one end by 8-in. channels, at the other end by a portal brace made up of 6-in. WF beams. Pairs of 4-in. channels protrude from the inside face of each girder to support 40-lb railroad rails.

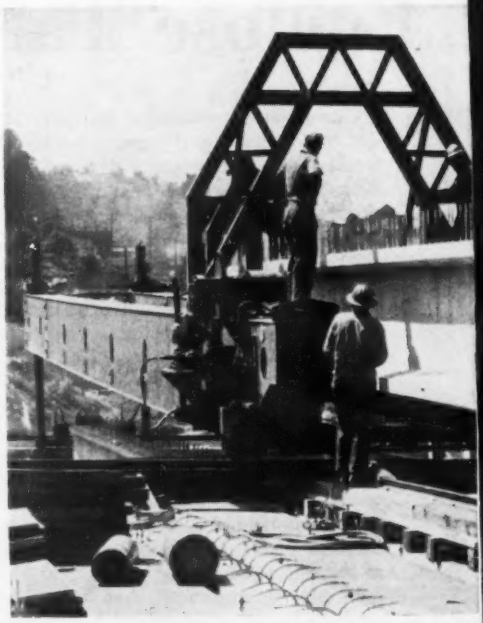
Emerging from the open end of each box girder is the telescoping section, a built-up steel beam 100 ft long.

Because the viaduct is built on both a curve and a grade, designers provided a leveling wheel assembly at the leading end of the telescoping beams, pinned to the ends of the beams. Two pieces of 8-in. steel pipe move vertically inside sleeves of the wheel assembly, with a 15-in. wheel on the lower end of each pipe. A 7-hp air motor operates a jack at either end of the assembly, so that beams may be raised or lowered separately or simultaneously.

• **Positioning the launcher**—First step in positioning the launcher over an open span is to cantilever it 30 ft beyond the bent of a completed span. The launcher moves over rollers under the box girders. The "anchor" end of the launcher is held above the deck by a 30-ton straddle carrier. A 3.2-hp air motor provides power for cantilevering through a cable and sheave assembly.

With the launcher's 50-ton weight balanced over the bent, the two telescoping beams are cantilevered about 60 ft beyond the ends of the box girders to the next bent. Workmen then lower the wheel assembly to a rail that is mounted at right angles to the bridge center line on a 60-ft long steel bearing pile on the pier bent girder. They then reverse the air motor and pull the rest of the launcher along the beams at the rate of 7 ft per minute.

The contractor then places another transverse section of rail under the anchor end of the launcher, 108 ft away from the outer rail and removes the rollers to release the straddle carrier.



Prestressed concrete bridge girder

elevated highway in Seattle.

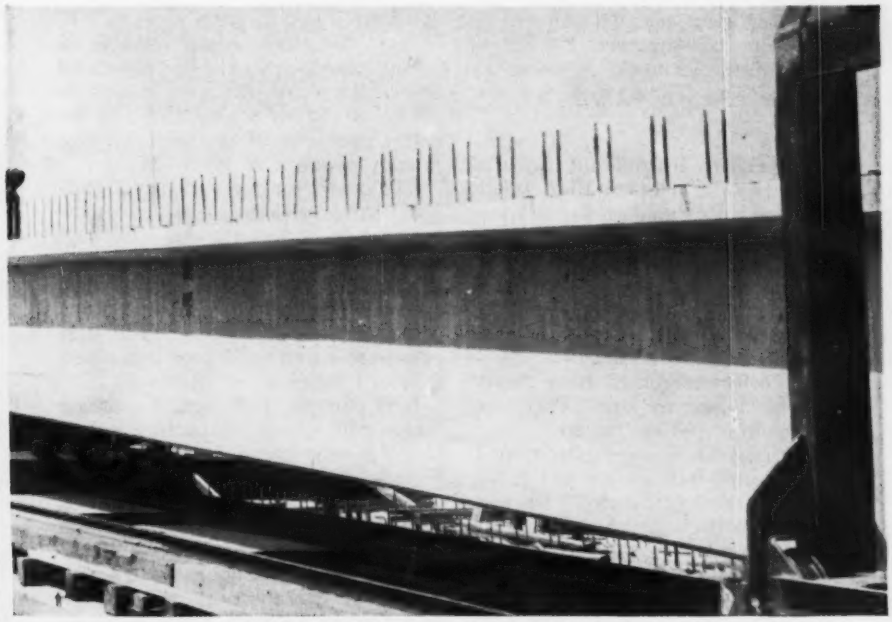
Friction collar eases handling of column

Viaduct Job

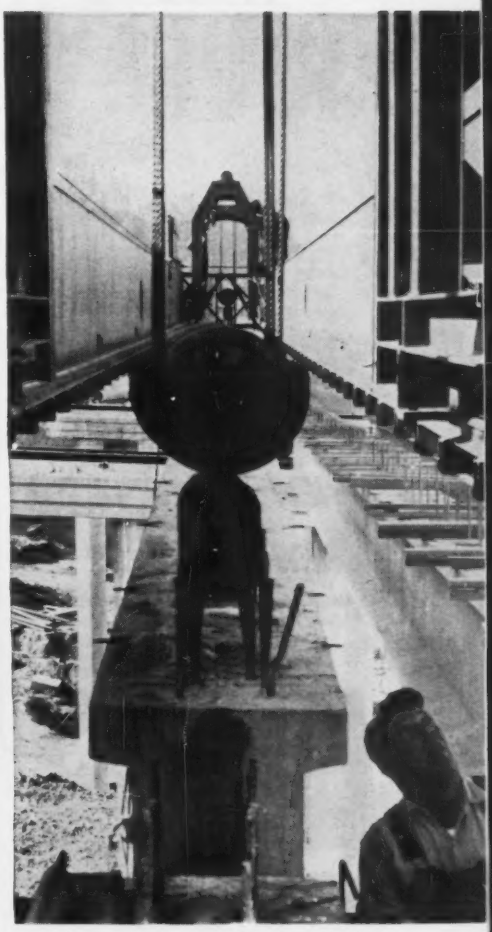
• **Handling the girders**—The contractor prestresses the concrete girders in a casting yard about 15 miles away. A truck brings them to the jobsite and backs up between two steel A-frames. Hoists on the A-frames lift each girder from the truck and hold it while track is laid beneath the girder.

Cables wrapped around one drum of a two-drum hoist pull the carriers along the tracks to straddle the girder. The girder is transferred from the A-frames to the carriers. The assembly then moves along the tracks to the launcher under pull from a cable and hoist.

As the first carrier reaches a short incline leading up to the tracks in the launcher, a workman thrusts a piece of reinforcing bar through a hole in the end of the girder. Cables from the launcher's power unit are slipped over the bar and carrier and girder are pulled up the incline. With the front carrier again on level tracks, control is trans-



rides rails into steel launching girder and is . . .



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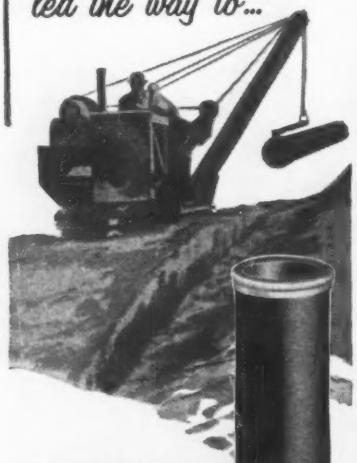

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BOLTS join segments of friction collars.

UPPER COLLARS support girder form.

ferred back to the hoist until the second carrier reaches the incline; the launcher's power unit takes the girder the rest of the way.

With the girder suspended above the pier bent girders, operators move the launcher sideways to bring the girder to the proper location. Four hoists at each end of each box girder are actuated by air motors for the transverse movement. Carrier hoists lift the girder slightly to permit removal of supporting bars, then lower the girder to the pier bent girder.

The launcher places 12 girders before it is moved ahead along the viaduct or over to a parallel structure. Production rate is a bent per week, including 1½ days for moving. The rig requires a crew of six.

• **Lifting collars**—Insignificant in size as compared to the launcher, the 1,100-lb clamp-type collars used on the 405 prestressed concrete pier columns are of equal value, pound for pound. They are the first friction-type collars permitted by the Washington Department of Highways to support falsework. Collars were test-loaded to 60 tons.

Each collar comprises three heavy weldments joined by bolts. There are 23 collars in use on the project.

The contractor fits one collar around each end of a 4-ft-dia hollow pier at the job site. A crane lifts each 30-ton pier into position over reinforcing steel extending upward from the foundations. Jacks bear against the lower collar to adjust the final position of the column.

The flange of the upper collar supports a temporary work platform during placing of concrete inside the column. The contractor uses a crane, concrete bucket and elephant trunk extending down inside the column to place the concrete. Guy wires from the collar to concrete pads on the ground steady the column. Final use of the collars is to support 14 tons of forms for the bent girder.

• **Foundations**—The concrete-filled steel caissons that support the pier columns descend to an average depth of 35 ft (maximum 54 ft) and are belled out at the bottom to a diameter of 4½ to 9 ft. When fluid sands caused trouble in belling out 17 caissons, the contractor drove clusters of five steel H-piles to depths of 30-35 ft as a substitute for the bell. Upper ends of the piles converge in each caisson.

The contractor drove about 400 staggered batter piles on a maximum spacing of 4 ft c-c for retaining walls and abutments. He used a swivel top to hang leads from the boom of a crane; 14 or 15 piles could be driven from one crane position. The 12-in., 53-lb steel piles were driven to 30 tons bearing on a 3½ to 1 batter.

John Rumsey, Jr. is project manager for the joint venture contractors; Robert Nesser is superintendent. Pacific Car & Foundry Co. designed and built the girder launcher and lifting collars.

Design and construction supervision are handled by a special district of the Washington Department of Highways. Walter E. McKibben is district engineer; George Andrews, urban engineer; and Gene Chamblin, resident engineer.

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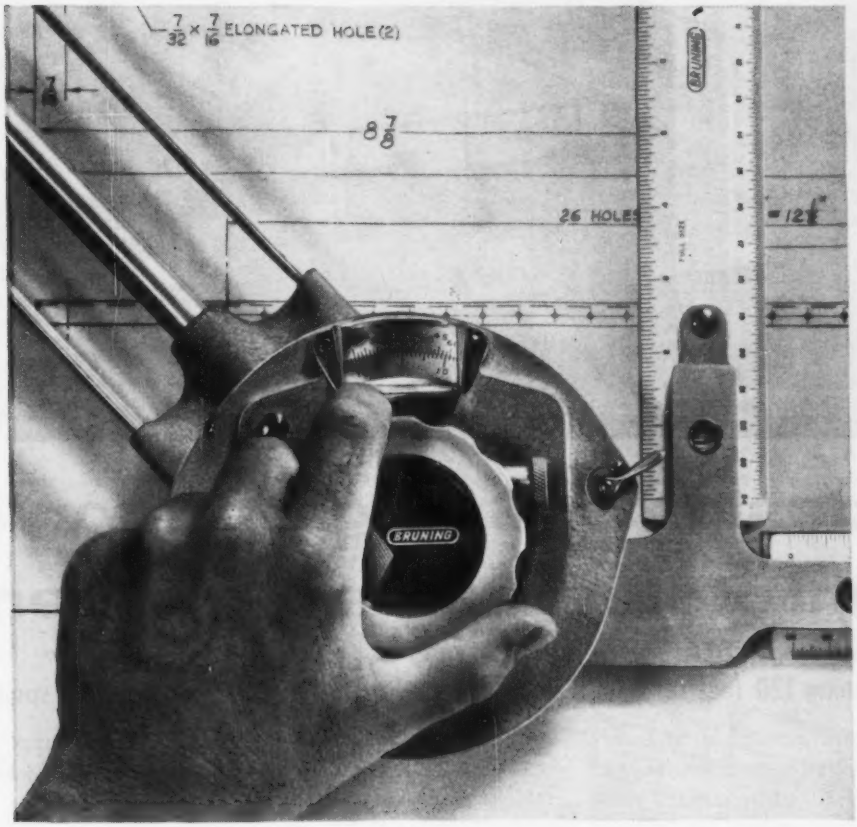

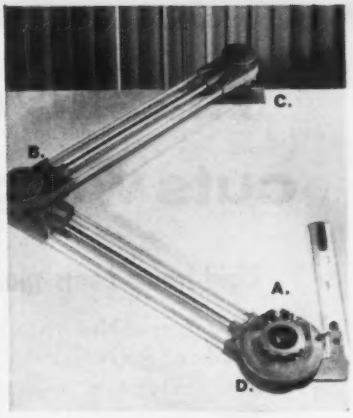

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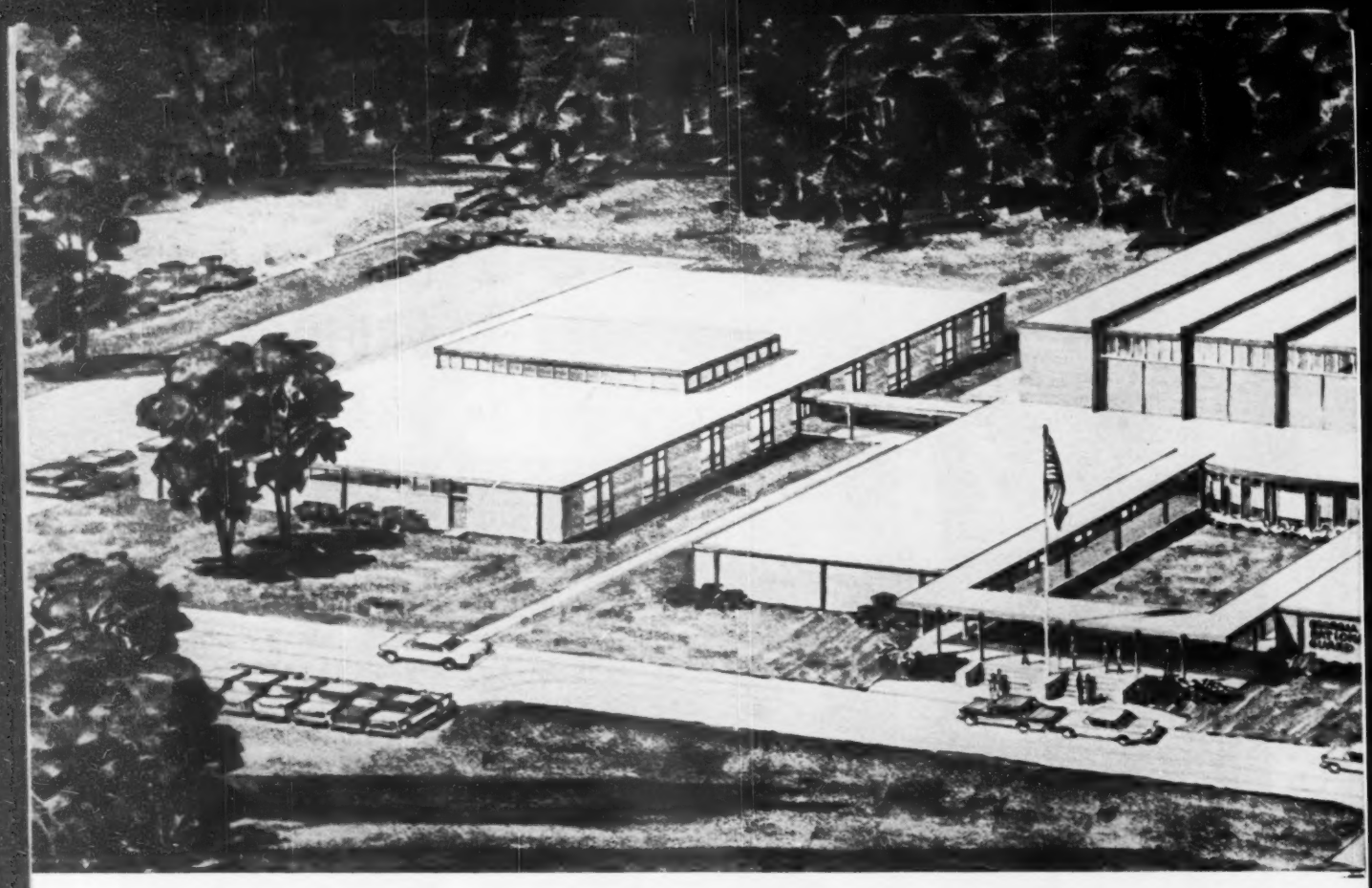


Plastic design of Georgia armory cuts weight of steel frame 15 per cent

Rigid-frame bents spanning 120 feet set new U.S. record for longest plastic-designed clear span

The Georgia National Guard Armory in Savannah, scheduled for completion late this summer, includes three steel-framed buildings linked by covered walkways. The central structure contains two headquarters and administration wings, and a column-free drill hall which will seat 5,000 when used as a sports arena. The two flanking buildings are each large enough to hold four company-size units.

Frames are outside of buildings

Seven 120-ft-long, rigid-frame bents, 20 feet center-to-center, span the drill hall. Clear height is 30 feet. Each of the 15-ton bents was fabricated from 33 WF 152 lb sections, giving a depth-span ratio of 1:44. Eight-inch purlins are framed into the bottom of the wide-flange sections, to expose the major portion of the frame outside the building.

The architects also derived an aesthetic as well as a functional use of the steel frame in the flanking buildings by exposing the columns. These support 12-inch channels which act as a fascia, and 12-inch light beams which frame the roof.

15 per cent savings in steel

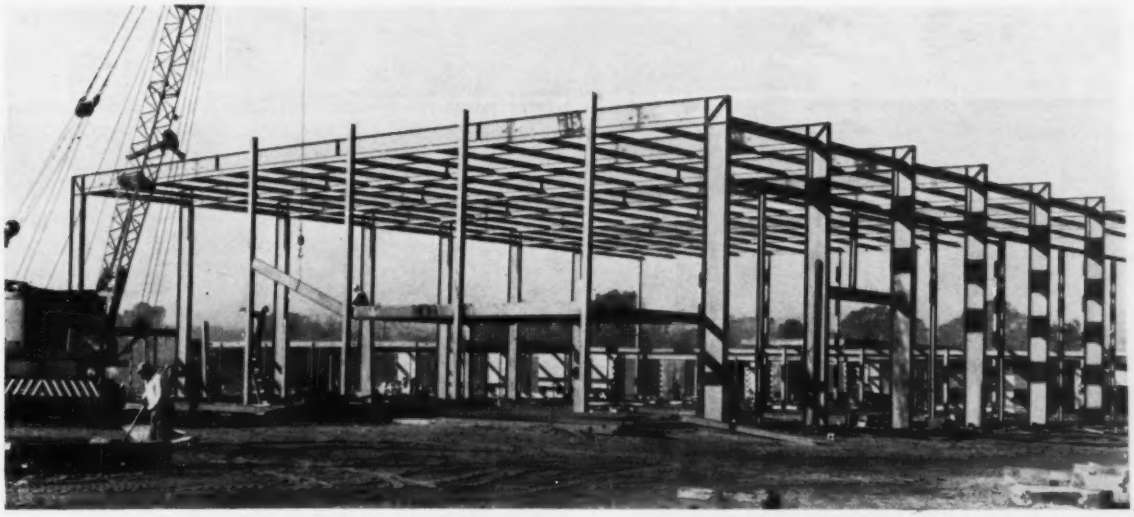
By using plastic design, the architects were able to reduce by 15 per cent the amount of structural steel needed to frame the buildings, as compared with the requirements necessary under the elastic method.

Steel design by the plastic method is a new development in design technique, and generally results in a more efficient structure with less steel required to achieve the same strength. It also saves on the cost of engineering, since it demands less engineering time on the part of the designers.

If you would like a copy of a 10-page AISC booklet on "Supplementary Rules for Plastic Design and Fabrication and Rolled Beam Properties for Plastic Design," write to us at Bethlehem, Pa.

See 26 steel products in action in one plant office! Visit Bethlehem's exhibit at the Industrial Building Exposition and Congress, September 25-28, in the New York Coliseum.

Steel is used extensively throughout the Georgia National Guard Armory, not only as a structural system, but also as frames for windows, canopies, and glass curtain walls. *Architects and Engineers:* Thomas-Driscoll-Hutton. *General Contractor:* Hugh Jackson. *Steel Fabricator:* Owen Steel Company. *Steel Erector:* Steel Erectors, Inc. The major portion of the 310 tons of structural and miscellaneous steel was supplied by Bethlehem.



Light weight of plastic-designed steel frame minimized difficulties created by poor subsoil conditions and led to economies in foundation construction.

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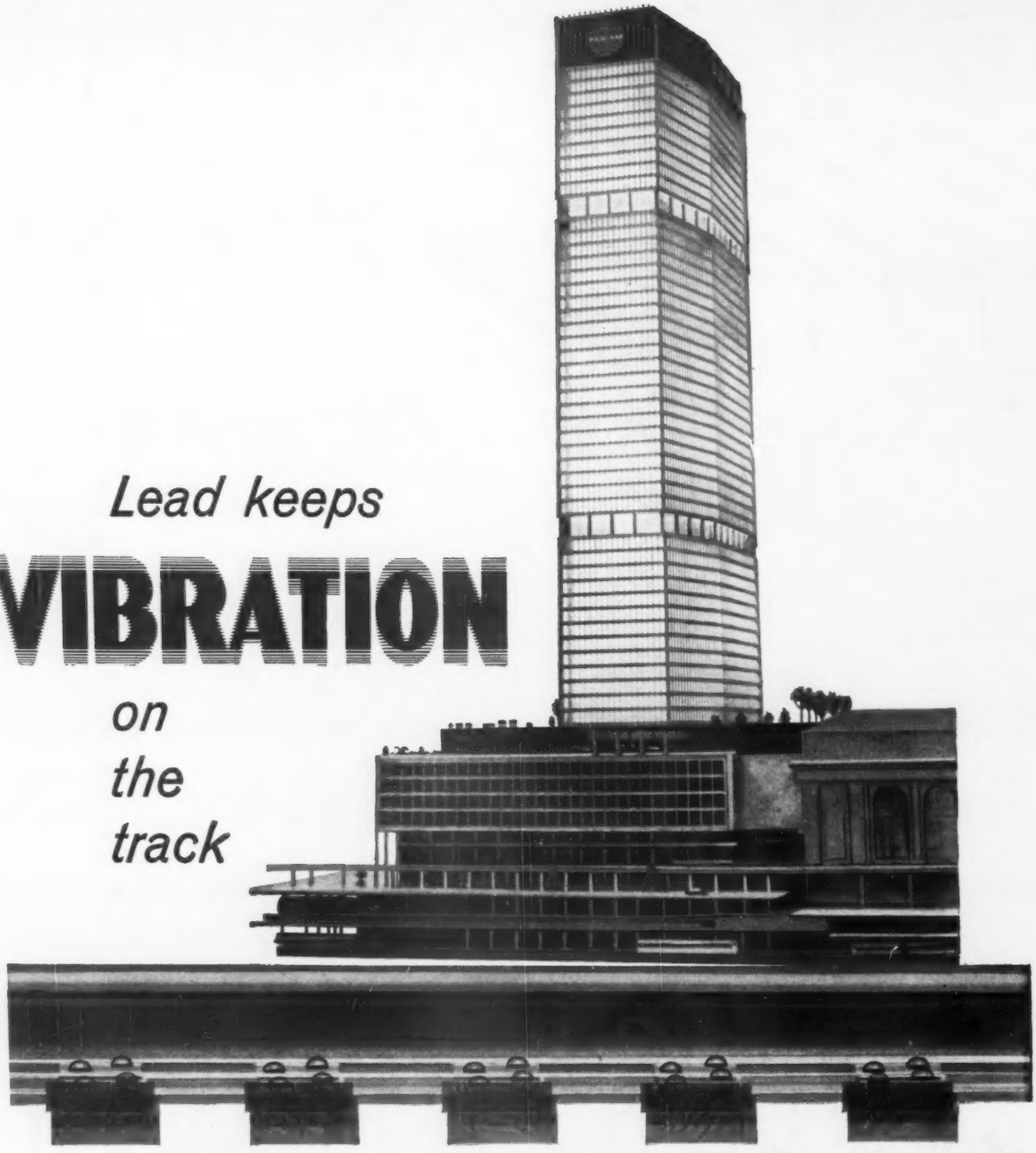

Pads for Pan Am Building supplied by John P. Abernethy & Co., Inc., New York City

for Pan Am Building

—Trains rumble endlessly on New York Central tracks beneath the Pan Am Building, now rising in Manhattan —every effort and engineering technique is being exerted to insure that occupants of the largest commercial office building ever built will be comfortably isolated from vibration. Placed beneath each of 238 steel columns supporting the 59 story structure, lead-asbestos pads are installed to muffle the shock and sound.

Similar cushions have already proved their worth at such other outstanding buildings as the Waldorf Astoria Hotel, the Union Carbide Building, the Bell Telephone Company Laboratories in New York, Queen Elizabeth Hotel and the Canadian National Railway Station in Montreal.

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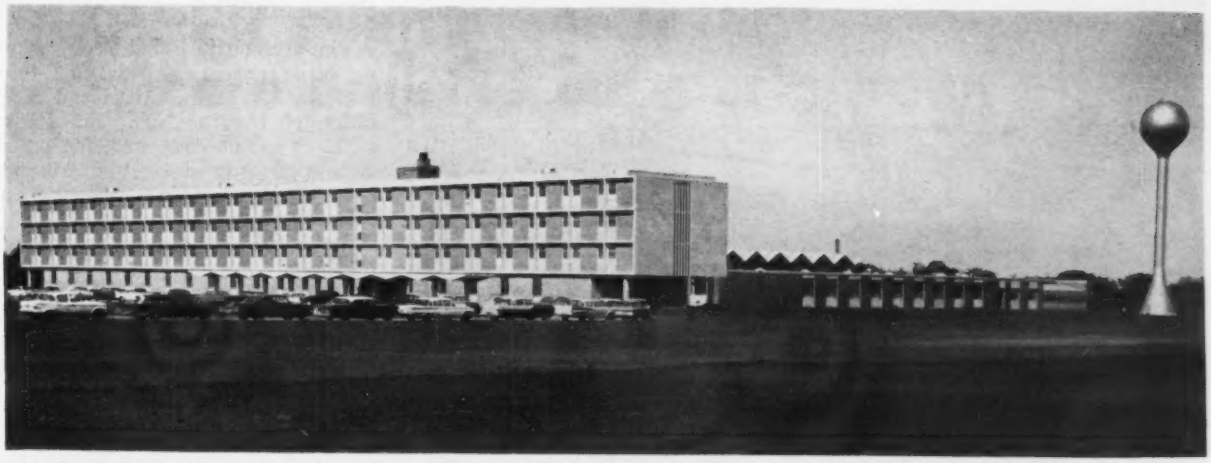
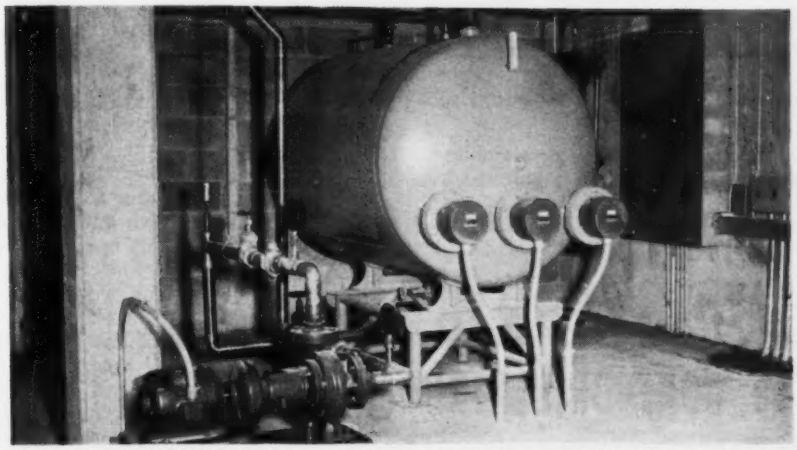


North Dakota convent is layed out for economic electric heating in a sub-zero climate.

Electric Heating Goes Farther North

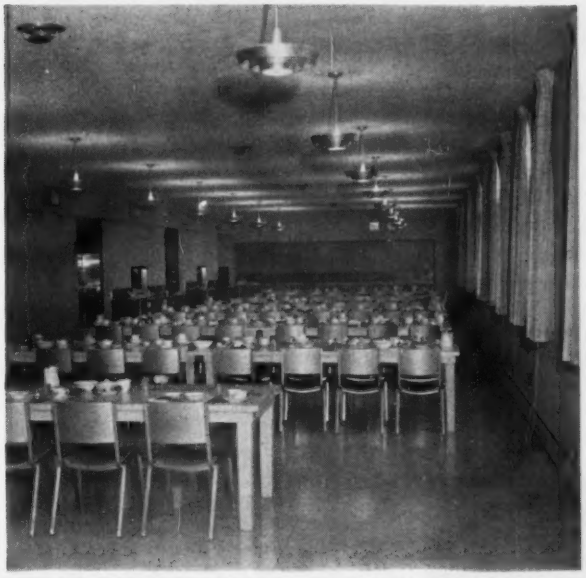


HEAT EXCHANGER and three 30-kw heaters warms large chapel and big dining room.

One of the nation's largest electric heating installations has been made in North Dakota—a state with winter temperatures as low as −40 F. The new electrically heated building is the $2 million Sacred Heart Convent in Fargo.

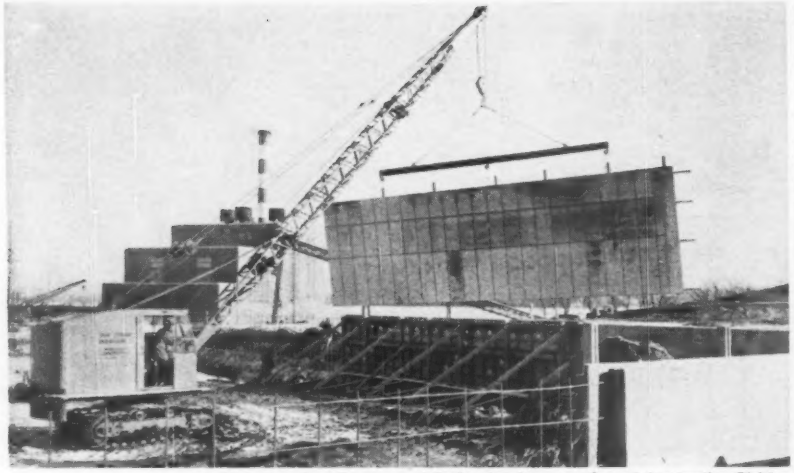
Fargo's heating season averages 9,250 degree-days. Despite the severe winters, electricity was recommended because:

- Annual heating costs would be only 5% more than with oil.
- Labor costs for electric operations are one-eighth to one-fifth that of oil.
- An initial savings of $50,000, plus 5% over 20 years was estimated—actual savings turned out to be $121,200.
- Space requirements for heating equipment would be reduced by 70%.
- The routine life of nuns allows for



DINING ROOM has high air grills and baseboard convectors.

CHAPEL has window-sill convectors and wall-mounted air grills.



Contractor, Fuel Economy and Engineering Company, General Construction Division

70 minutes to assemble, erect and strip gang section

Yes, that's right, just 70 minutes. Five men plus a crane, assembled, erected and stripped a 45 x 13 ft Symons steel-ply form gang section. The job—a rectangular fire wall at the Fox Lake Station of Interstate Power Company at Sherburn, Minnesota.

Another interesting aspect of the job is that the walls are battered from 16 inches at the bottom to eight inches at the top with joints every 45 feet. The rectangular wall is 440 x 180 ft and encloses two 55,000 barrel fuel tanks.

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Acker's SP is designed for heavy duty service. It has a four speed cathead hoist, built-in reverse and four speed transmission. It's completely self-contained and mounts on truck. Owners of the SP are reporting unprecedented results drilling and augering for soil samples, in hollow stem augering and geophysical and geological exploration.

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efficient control of heat needs and losses.

The decision to install electric heating in the convent was based on a study made by Kirkham, Michael and Associates, of Omaha, Neb., and Fargo, N. D. The firm calculated that power costs would run about 16.3 mils per kwh. Yet the Cass County Electric Cooperative, Inc., Kindred, N. D., estimates that the charge will only be from 13.22 to 13.46 mils. The electric company's estimate is based on an annual usage of 6 to 7 million kwh, a peak demand of 1,200 kw and a monthly load factor of approximately 85%.

Kirkham, Michael and Associates expect the annual power bill for the 996,978-cu-ft convent to be about $50,056.79, as opposed to $47,775 with oil heating. Both figures include total energy requirements, water heating, kitchen needs, lighting, etc. And both figures assume that oil heating would be as efficiently controlled as electric. Estimates of initial savings were based on a 70% reduction in construction costs and a 40% cut in equipment costs, in favor of electricity.

At Sacred Heart Convent, operating efficiency is achieved through reduction of heat loss and zone control.

To help reduce heating losses and needs, the smallest area of the building faces the prevailing wind. And the building is insulated with 4-in. foamed plastic in the walls, 3½-in. in the ceiling and a 2-in. underlay in the floors. Perimeter insulation and weatherstripping are also used.

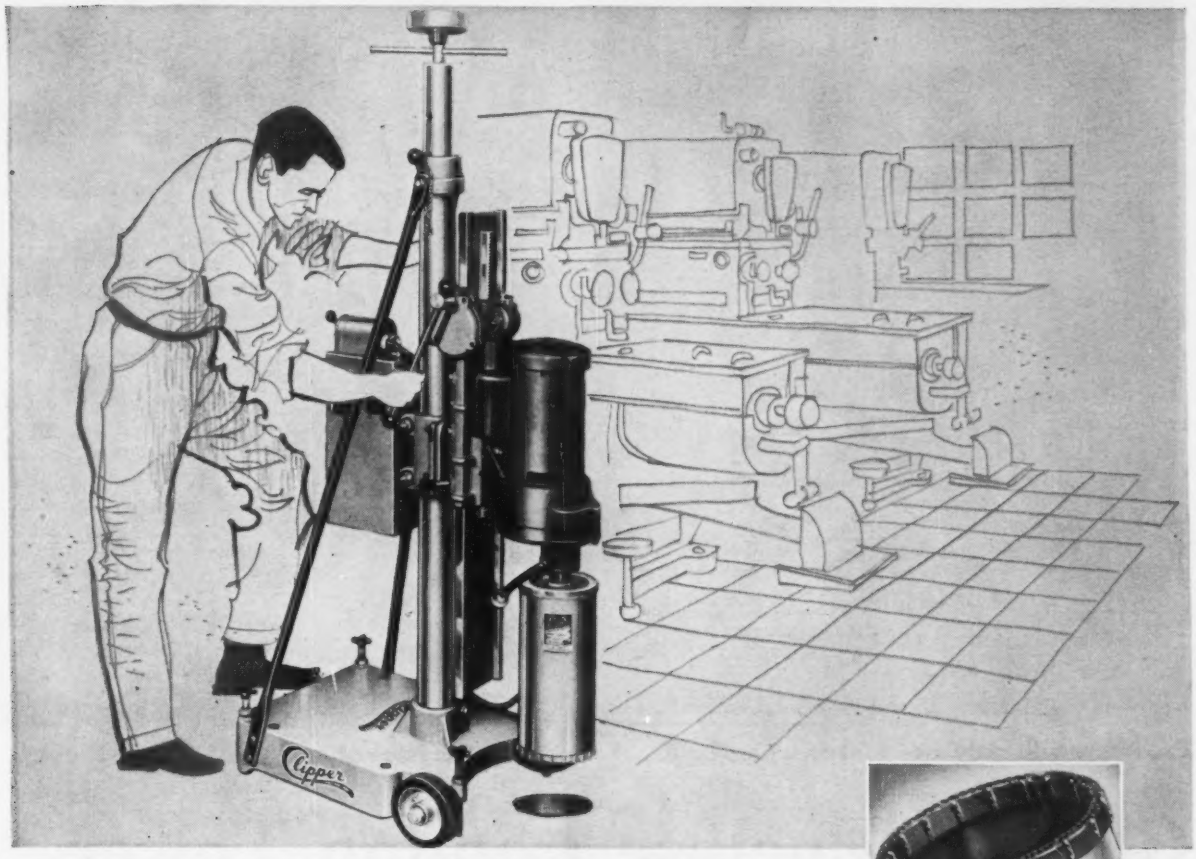
Zone control automatically reduces heat in areas not being used, or automatically increases the heat in areas soon to be occupied. In the nuns' cells, for example, heat is cut back a short time after the fixed routine requires them to leave in the morning. And before their scheduled return, the heat is turned on again. The system also has a load-limiting feature that meets heat requirements without excessive cycling under mild weather conditions.

The convent consists of a four-level dormitory, which will initially house 175, an office building, chapel-and-rectory, plus kitchen, dining and other facilities.

Baseboard heating panels are used for the convent rooms. Assembly areas have unit ventilators for heating and, in some cases, for air-conditioning. Corridor heating is by recessed convectors. A total of 2,582 lineal ft of baseboard, electric heaters and 71 panel convectors are inside the building. There are also 18 unit ventilators with heated-air intakes.

The convent was designed by Kurke Associates of Fargo. General contractor was T. F. Powers Construction Co. And the electrical contractor was the Reger Electric Co., Fargo, N. D.

CLIPPER guarantees its core drills to out-perform all others

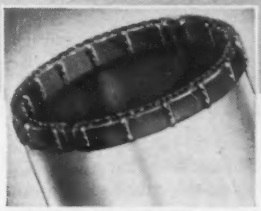


Holes Up to 14" in Concrete in Minutes

When you buy a Clipper Core Drill you know you're buying the world's only core drill guaranteed to provide completely successful drilling. No matter how tough the drilling job, the speed of a Clipper drill remains constant, assuring faster drilling and longer bit life. In minutes, a Clipper will drill holes up to 14" in diameter through reinforced concrete, asphalt, masonry, stone and refractory products.

POWER—Equipped with specially designed G.E. induction type motors, Clipper Core Drills give maximum power . . . are lifetime lubricated . . . have no brushes to wear out . . . have heavy duty hardened steel gears and anti-friction bearings.

CONSTANT SPEED—Under any load, the speed of a Clipper core drill remains constant. And most important, you get a choice of speeds—300, 800 and 1500 R.P.M.—to fit the size bit for the job you are doing. Only Clipper offers all these extras for more effective drilling and longer bit life. Don't be misled . . . adequate power and proper constant speed are essential for fast, economical drilling . . . and are not available in ordinary units using converted hand drill motors.



ORIENTED SURFACE SET RESETTABLE BITS give maximum bit life in the hardest reinforced concrete.

SURFACE SET "THROW-A-WAY" BITS — Combine drilling speed of resettable bit with convenience of "throw-a-way" bits.

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☐ Clipper Masonry and Concrete Saws for all masonry, concrete and asphalt cutting

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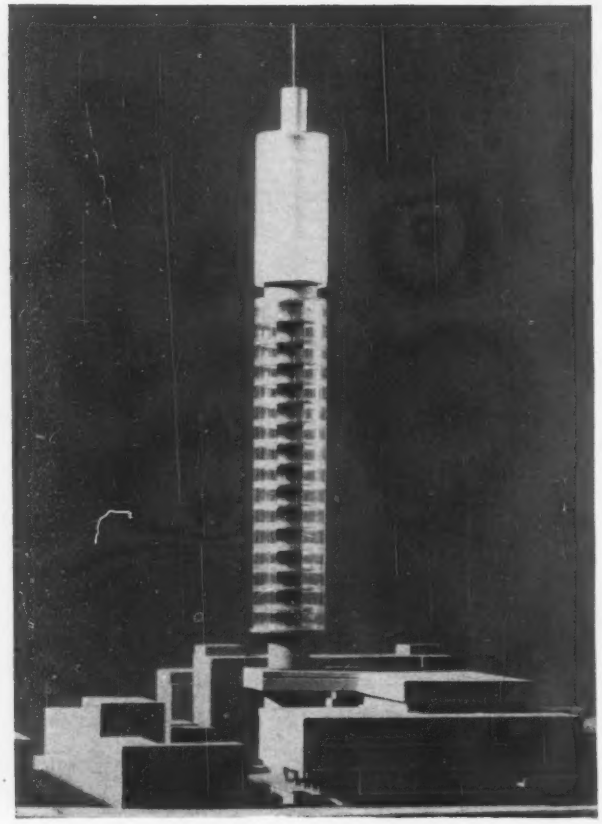
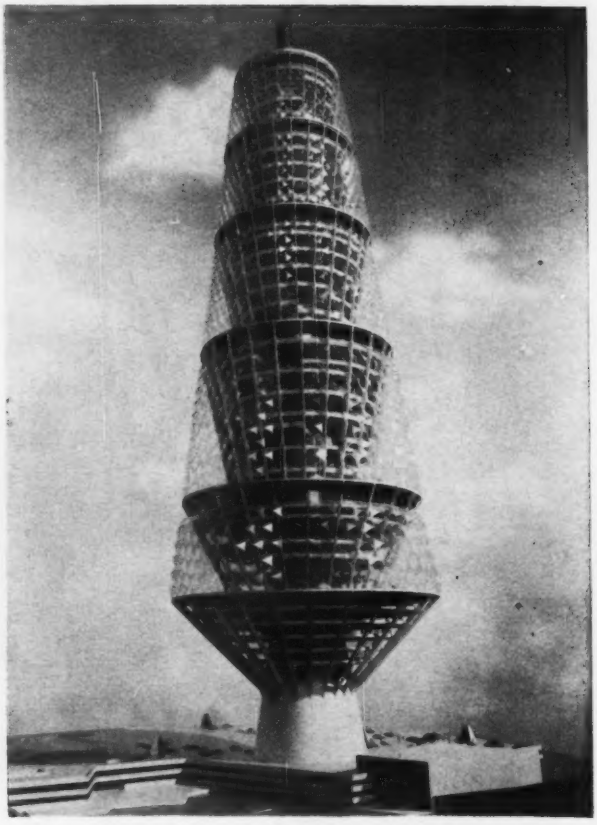


Exchange will only rise 500 ft when built . . .



. . . but Crystal 61 will top 1,000 ft, if built.

Glass to Enclose London Towers

Londoners have just heard of plans for two new towers, one to house municipal services and another to display private industry's wares.

Glass will enclose both structures, and a central concrete shaft, housing elevators, will stabilize each. But right now, only one tower is definite.

First contracts have already let for the Museum Telephone Exchange Extension with its 505-ft antenna Tower. It will house telephone equipment for London's busy Museum exchange, and double as a micro-wave radio antenna tower and television relay station.

The Chief Architect's Division of the Ministry of Works designed the 500-ft cylinder for London's General Post Office, operator of telephone exchanges. A low-rise building with 150,000 sq ft of floor area, also is included in the project. The tower and its associated building will cost about $4 million.

The tower has a viewing platform, six antenna floors, a setback floor, fifteen 54-ft-dia floors to house telephone apparatus, and a 28-ft-dia base tapered to 35 ft at the very bottom.

Framing 80 ft above the ground supports a bridge and braces the tower to the low-rise base building.

The antenna floors hang from a steel yoke that is cantilevered from the top of the center shaft. Connection from the yoke to the floors is through a steel framework, arranged in a pattern that offers minimum radio-tv interference. Opaque plastic panels enclose the antenna section.

A $700,000 contract for the tower foundation and basement of the low-rise building has already been awarded to Peter Lind & Co., Ltd., London. Bids for the superstructure are expected to be taken in October.

The other London tower is called Crystal 61. If constructed, the $28-million spire would be the tallest structure in Europe, topping the Eiffel tower by about 19 ft. Crystal 61 would rise from a 130-ft-dia base to 1,016 ft above London's streets.

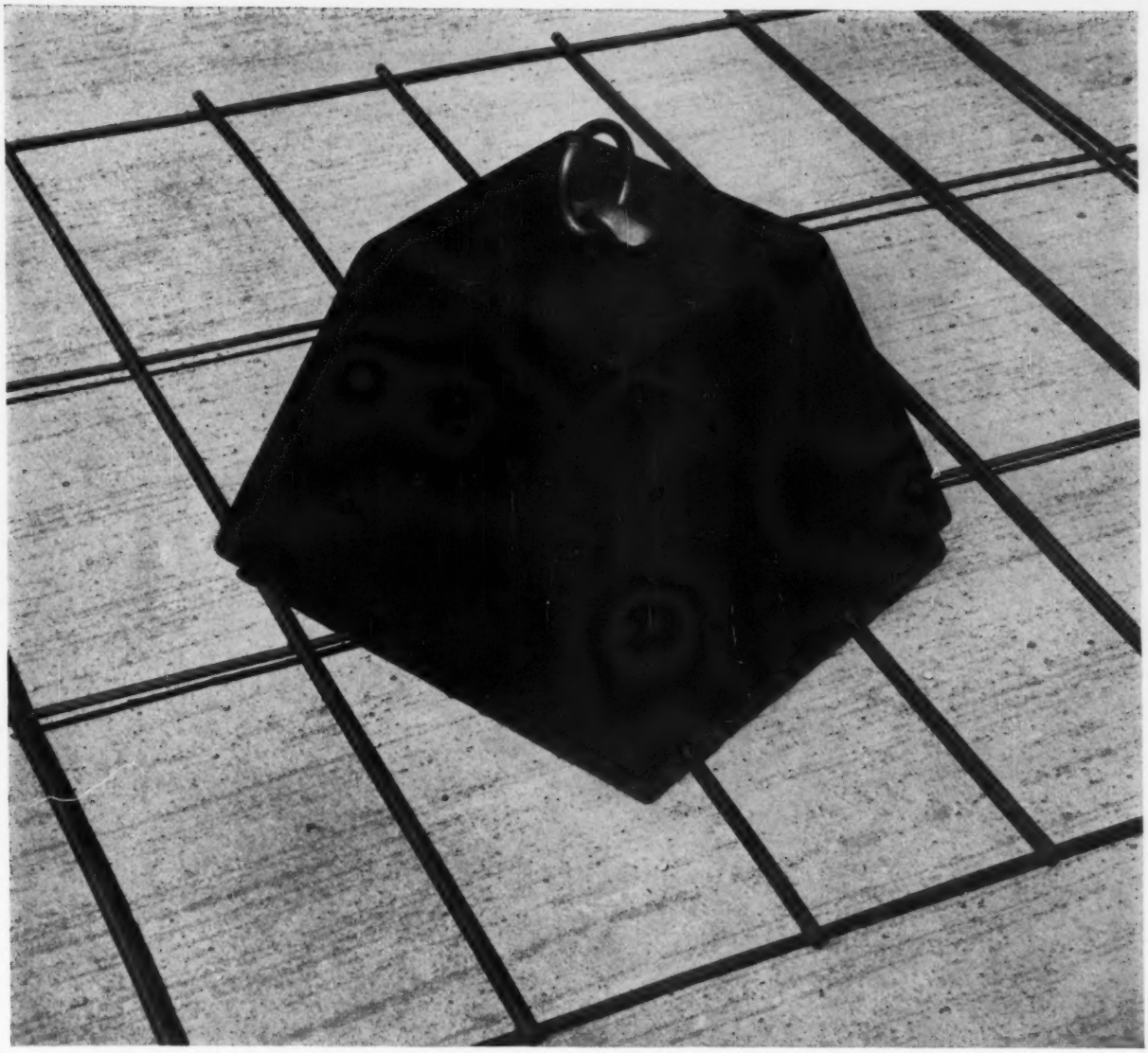
The Glass Age Development Committee proposes the glass-sheathed skyscraper as a show place for industrial products and for glass. GADC was organized by Plinkton Brothers Ltd., glass manufacturer.

The general plan of Crystal 61 offers almost 1 million sq ft of floor, with 569,000 sq ft of that planned for actual exhibition space. Five drum-shaped halls radiate from the hollow concrete core. Each hall is composed of the main level floor, for tall bulky exhibits, and a series of smaller floor levels above the main floor. All floors cantilever from the core, and are supported at the outside by radial columns sloping down to the core.

Ten elevators, rising through the core, will handle 110 passengers each or objects 16 x 9 x 15 ft high. Larger display products are to be carried as far as the highest level by interlinking elevators.

The entrance for passengers and goods is at grade, below a four-floor podium that provides parking for 4,500 cars.

Jellicoe, Ballantyne and Colerdge is the architect. And the structural engineer is Ove Arup and Partners. Both are of London.



Heavy loads shorten concrete road life... CF&I Welded Wire Fabric lengthens it

In modern concrete highways, reinforcement with welded wire fabric is important. Without it, major arteries don't stand up well against pounding tires and heavy loads.

When embedded in concrete, CF&I Welded Wire Fabric serves as a steel backbone that literally holds highways together. It cushions the impact of heavy, fast-moving vehicles by distributing load stresses and minimizing cracking. And these are the things that make the difference between long, trouble-free road life and expensive maintenance operations.

Put CF&I Welded Wire Fabric to work in your roads. It meets all ASTM specifications and is available in a wide range of gages and spacings to meet virtually every type of reinforcing requirement. Call your nearby CF&I sales office for complete details.

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stripping coal in Ohio, or...

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if you are breaking rock,
you can do it cheaper, faster, more efficiently with...

EXPLOSIVES ENERGY

Now, through the reduced cost of blasting materials and the improved equipment and techniques for drilling, many profit-minded operators in all fields are using explosives energy to accomplish tasks formerly reserved for mechanical equipment. As a result they are realizing valuable savings on shovels, 'dozers, trucks, and total man-hours.

The photographs at the left illustrate just three examples of the many ways explosives energy is being used more fully, more efficiently. On a section of the Turkey Creek Expressway near Kansas City, the objective was maximum breakage and production on every shot. For this contractor, efficient use of explosives energy meant more thorough and consistent breakage, more payload work out of each piece of his equipment, and minimum downtime from end to end of the job.

In another case, a coal stripper in Ohio developed a way to eliminate almost one-half the total mechanical handling of overburden. He used explosives force to cast much of the overburden directly to the spoil pile, thus eliminating almost half of the mechanical handling previously required.

A quarry operator in Maryland boosted his production and lowered his maintenance downtime by using explosives energy to get more thorough, uniform breakage and excellent displacement for easy digging. The result was better production by both the shovel and the crusher—with reduced maintenance costs as a bonus.

Efficiencies, and therefore savings, like these are available to you too. Your Atlas Representative, backed by Atlas' full line—the only full line of ammonium nitrate and explosives in the industry—can help you select the right combination of explosives, blasting agents (including all forms of ammonium nitrate) and blasting supplies, to meet your particular requirements.

New, modern facilities are now in production at Joplin, Mo. and Reynolds, Pa., to assure ready availability of all Atlas products. And to give you faster, more flexible local service, expanded distribution facilities are being established coast-to-coast. For prompt assistance, call in your Atlas Representative. Or, write to:

ATLAS CHEMICAL INDUSTRIES, INC.
EXPLOSIVES DIVISION • WILMINGTON, DELAWARE

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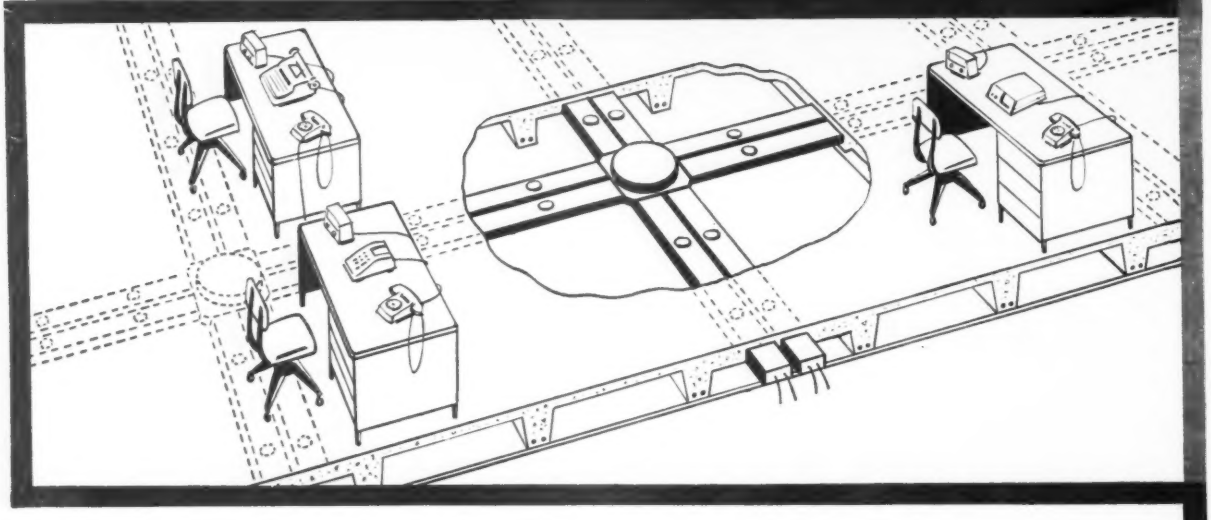
Increase electrical efficiency with

R/C DUCT FLOORS

(Electrified Concrete Joist Floors)



Office planning becomes more efficient when you specify low-cost R/C Duct Floors. This underfloor electrical distribution system makes it possible for every desk or piece of office equipment—including telephone, intercom, and business machines—to be serviced directly from floor outlets underneath. When offices or desks are rearranged, partitions moved or added, electrical outlets are always readily available. Unused outlets can be neatly closed, and reserve service outlets utilized without digging up floors or running exposed conduit or extension cords over floors, walls, or ceilings.

R/C Duct Floors is only one of the many design features available for reinforced concrete building construction. On your next project, investigate all of the advantages of this more versatile building material.

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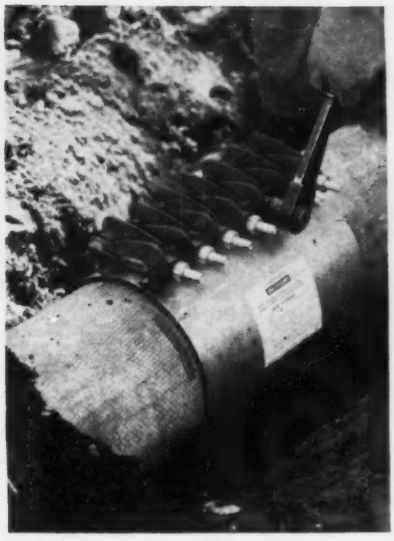


Bolts, all on one side . . .

needn't be removed to open . . .

Lightweight Pipe Repair Clamp

A versatile, lightweight pipe repair clamp has been added to the Dresser family of pipe couplings and clamps.

The one-piece wrap-around clamp works on all types of pipe and is especially suitable for asbestos-cement pipe, according to Dresser.

The clamp is available for all common pipe sizes from 2 in. to 14 in. OD. It is specifically designed for repairing holes and circumferential breaks or splits in all types of pipe—cast iron, asbestos-cement and steel.

A refinement of an earlier Dresser repair clamp, the new clamp has a butt-joint gasket and a bolted take-up device on only one side of the stainless steel jacket.

The clamp mechanism embodies the sliding alignment fingers used on the Dre- • "360" clamp, but on the new device there are more fingers and bolts, all on the same side of the clamp, and the bolt heads slip out of the clamp making it possible to open the clamp without removing nuts or bolts.

The larger the pipe diameter to be repaired, the longer the clamp and the more bolts and aligning fingers.

The clamp is designed to work on both the rough barrel or the machined end of asbestos-cement pipe, as well as the run of cast iron and steel pipe.

The clamp's thin stainless steel jacket makes it adaptable for joining pipes that are deflected up to 4 deg and offset up to ⅛ in. The clamp will also join pipes that differ up to ¼-in. in outside diameter.

The stainless steel jacket is thicker at the point where the clamp joins it. This extra thickness gives added support so that an effective seal is possible even when pipe ends are as much as 1 in. apart. Its ¼-in.-thick rubber gasket is soft enough to conform to most surface irregularities in the pipe.

Dresser claims less excavation is required in the ditch to install the clamp because it has lugs on only one side. The drop-in bolts, which need only be loosened, avoid lost bolts or nuts. Lower bolt torques are required for a watertight seal, the maker claims. Dresser Mfg. Div., Dresser Industries, Bradford, Pa.

Switch Shuts Down Pump When Liquid Level Is Low

A water level safety switch prevents damage to pumps that depend on pumped liquid for lubrication and cooling. If there isn't enough liquid at the source or when the pump loses its prime, the safety switch measures discharge pressure and automatically shuts the system down.

The switch mounts on the pump discharge line. It is connected in series with the pump motor power supply. If after a predetermined period, pump discharge is not at a specified pressure level, a microswitch electrically disconnects the pump motor, stopping the system. United States Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.

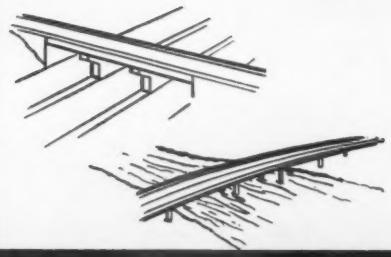
TOPS 'EM ALL AS THE NO. 1 THIRST-QUENCHER

IGLOO is first for thirst and should be a regular fixture on every construction job. Have one for about every 6 to 8 workers and get more time spent on the job. Improves employee relations, too. Out of the 23 sizes and models available there's one exactly fitted to your needs. IGLOO portable water coolers have been time-tested and proved on thousands of tough jobs over the world.

Write for catalog.

IGLOO *Memphis 18, Tenn.*

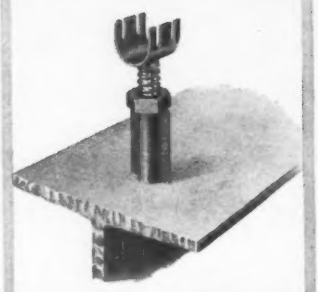
Especially Designed For Use On Bridges, Overpasses and Underpasses...



SUPERIOR Heavy-Duty SCREED SUPPORTS

Made to take the heavy loads of traveling vibratory screeding equipment.

Designed for use with 1¼" and 1½" I.D. pipe screeds, Superior Heavy-Duty Screed Supports provide a simpler and faster method of supporting the loads of heavy traveling screeding equipment. Only the inexpensive bases are left in the concrete. The adjustable holders are easily removed, together with the pipe screed, because the holders are set, not threaded into the base. The nut covers the base opening and prevents concrete from entering.



METAL BASE TYPE

ADJUSTABLE—RE-USABLE

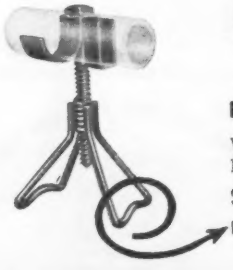
2 Types

METAL BASE TYPE for use on Structural Steel is tack-welded to the top flange on about 4' centers. The Screed Holder is set into the base and adjusted for height by turning the nut. The threads are fast — 3-to-the inch, of a contour type, non-clogging and easily cleaned.

CHAIR BASE TYPE for use on wood or plywood decks is easily secured to the deck by nailing across the upturned legs. Note that this base has three legs for positive stability. . . . If desired legs can be supplied of galvanized wire.

CHAIR BASE TYPE

For details request Catalog 700.



SUPERIOR Standard SCREED CHAIRS

For formed slabs 4½" and greater in thickness.

With re-usable adjustable screed holders using 1" I.D. pipe and rectangular bars for screeds.

Screed Chairs for slabs on fill are also available.

NOTE — This design offers greater strength and stability than individual unconnected legs.

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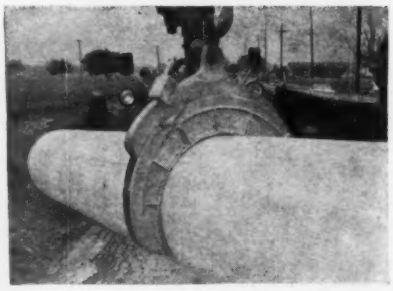
New Products



Light-weight Tongs Quick To Pick Up Pipe

Quick pickup and releases are attributed to a line of pipe lifting tongs that can handle asbestos-cement, concrete, plain or wrapped steel and cast iron pipe.

Tongs are available in heat-treated aluminum alloy in sizes from 4 in. to 25 in. O.D.

Lifting capacity ranges from 2,500 lb to 4,000 lb. When greater strength is needed or larger diameters are handled, tongs are made of steel.

A patented compound leverage action assures a stable power grip. Crescent Pipe Tongs Co., 9936 Ramona Ave., Bellflower, Calif.

Plastic Sheets Stack Up As Trickling Filters

Instead of rocks, gravel, furnace slag or similar packing media, trickling filters can be packed with plastic sheets called Dowpac 20A.

Individual sheets of the plastic, 36x21 in., are corrugated in two directions. They can be assembled side by side to form a cubic module for an aerating tower.

The sheets provide a means of bringing waste in contact with a sufficient source of oxygen, and provide the proper environment for growth of microorganisms that act upon the wastes.

The sheets are designed to distribute liquid wastes in a thin film over large surface areas to permit maximum aeration; to provide a high percentage of void space for unimpeded natural-draft ventilation and waste flow; and to provide large surface areas to which active biological slimes can cling.

The sheets are made of Saran, weigh about 6 lb per cu ft. They are completely self supporting, requiring only a simple enclosure to protect the packing from wind and weather. A special automatic welder is used to bind them together. Dow Industrial Service, Division of the Dow Chemical Company, 20575 Center Ridge Road, Cleveland 16, Ohio.

NEW MORE POWERFUL LE ROI 125 ROTARY

15% more hp and 60% power surplus assure capacity output... improve efficiency... and extend time between engine overhaul.

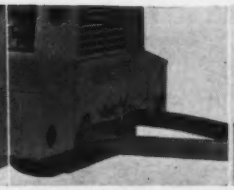
This new Le Roi 125 Rotary compressor guarantees full 125-cfm air supply whenever and wherever you need it. Thus, you can replace two smaller machines *and operators* with a single 125. And you don't have to waste a larger compressor on jobs where 125-cfm air supply is adequate.

Extra power enables the engine to deliver full capacity at only 1600 rpm — 150 to 400 rpm slower than other makes. This cuts wear on both engine and compressor parts and reduces upkeep. What's more, the use of Stellite exhaust valves and valve seat inserts and positive valve rotators in the engine improves fuel economy and extends valve life.

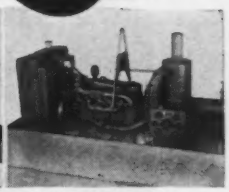
The new Le Roi 125 Rotary incorporates "double life" reversible rotors, a Le Roi exclusive. Spline couplings assure positive power transfer from engine to compressor and oil pump. Dump valve, minimum pressure orifice, low-oil-pressure cut-out switch, and thermo by-pass valve operate automatically, providing protection against down-time due to accident or neglect.

At 2190 lbs. dry weight, the Le Roi 125 is the lightest compressor in its class. It is designed for easy handling on the site and for fast inspection and servicing in the field. Gasoline and diesel models available on wheel mounts — and gasoline utility model for cross truck bed mounting. PC-101

MORE TOOL SPACE in lockable tool boxes on each side.



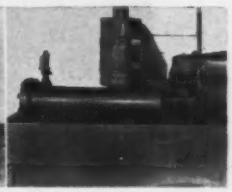
AIR SERVICE valves and hose connections are protected by tow bar.



LIFTING BAIL permits easy, safe overhead pickup.

PROTECTION against damage in transit assured by mounting radiator and oil cooler at tow-bar end.

REMOVABLE HOOD can easily be lifted off by two men after loosening just 8 cap screws.



OIL SEPARATOR is independent of the receiver and easily accessible for changing separator element.

UTILITY MODEL is base mounted . . . all controls and service valves grouped for "curb-side" operation.

SWIVEL TOWING EYE is spring-loaded to ease towing strain over rough terrain and during acceleration.

STURDY THIRD WHEEL easily lifts out of way and locks for towing — no "knuckle-busting."

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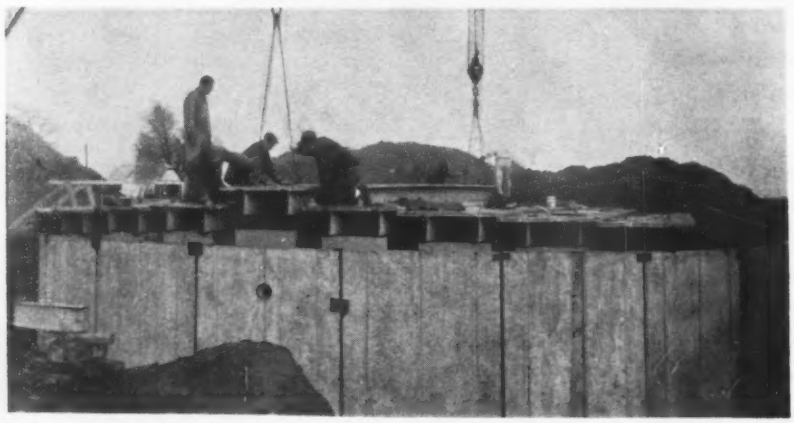
FOLDING PANELS lock up and out-of-the-way . . . aid operation and servicing.

LE ROI Division of Westinghouse Air Brake Co. Sidney, Ohio

Precast Panels Make a Prestressed

Wall panels were erected, braced, and the joints concreted.



Precast roof slabs were put into place before pretensioning.

Unusual methods went into the construction of a new concrete water tank in Neoga, Ill.

First the builders constructed both the wall and roof from precast panels instead of casting at least the wall in place. Then instead of prestressing the wall with closely spaced turns of wire wrapped under the required tension, they wrapped it with widely spaced turns of cable and tensioned the cable in 180-degree increments by jacking.

The wall consists of panels 6.5 ft wide by 18 ft high by 4 in. thick. Joints were concreted after panel erection, but before prestressing. As bearing surfaces for the cables, steel bars were set vertically 24 in. c-c in the outer faces of the panels.

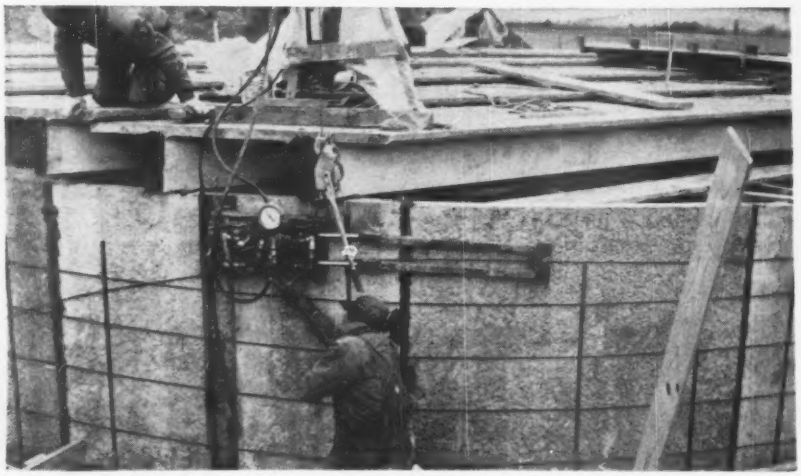
The prestress contractor wound the tank with a continuous spiral of ⅜-in. cable, stressing the cable after each half turn. Spacing of successive laps ranged from 6 in. at the bottom of the tank to 8 in. at the top.

Two hydraulic cable stretchers, 180 deg apart, tensioned the cable. Footholds for the stretchers were provided by a 9 x 1½-in. groove from top to bottom in the outer face of each of two wall panels diametrically opposite one another.

The stretchers alternated between pulling and holding, one pulling while the other held. They swapped roles with every increment of prestress.

After the wall was prestressed, the builders sprayed it with ¾-in. of mortar.

The wall footing and tank floor were cast integrally 16 ft below grade. The



Jacks tension the prestressing cable half a turn at a time.

Wall is gasketed to floor.

Water Tank

monolith tapers from 12-in. thick under the wall to 4-in. thick in the interior. Wall panels rest on a rubber pad in a 3-in.-deep trench in the top of the footing.

Preload Corp., New York City, is the prestress contractor. Federal Cement Tile Co., Chicago, precast the wall panels. Prestress Concrete Co., Springfield, Ill., fabricated the roof slabs. Engineering Service Corp., Decatur, Ill., are the consulting engineers.

Compact Truck Plant Pumps Fill in a Hurry

In 21 working days, a small group of workmen covered 12 acres of warehouse roof with foamed insulating concrete fill. Their rate of work: over 24,000 sq ft a day. Their only tools: screed bars for grading the fill and three trucks tied together to form an automatic concrete mixing and pumping plant.

The project is a new distribution center for Montgomery Ward in Fort Worth, Texas. The 12-acre warehouse roof is a corrugated steel metal deck with the foamed concrete fill topped by a 4-ply membrane roofing with gravel cover.

Linked back-to-back in a three-point star pattern, the mobile plant consisted of a bulk cement semi-trailor, a bulk carrier for the fill aggregate and a 2-ton truck carrying batchers, pumps and a maze of piping.

Twin hoppers with screw conveyors carried material from the bulk trucks to a screw mixer on the third unit. Here, through a temporary connection metered water was added to the mix. Fed to a second screw mixer, a foam of water, expanding agent and compressed air mix with the fill. Last move was through a pump hopper and out onto the roof.

Operators controlled fill density at the second stage mixer by varying the foam mixture.

The Austin Company, Houston, designed and built the distribution center. The roof deck and insulating fill was installed by the Lydick Roofing Co., Fort Worth. The expanded fill is Mearlcrete, a product of Mearl Chemical Corp., Roselle Park, N. J. Lydick, as a franchised Mearlcrete contractor, operated an adaption of Mearl's patented mixing and pumping equipment.

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For sealing joints, For surface sealcoating, For concrete bonding,

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M-200: Fast setting, polymer type joint and crack sealer for concrete pavements—cold applied. Offers best resistance to jet aircraft heat and blast operations under wide temperature variations. Meets Interim Fed. Spec. SS-S-00200a.

H-100: Modified polymer type, two-component compound for concrete pavement and structure joints in highway and non-critical airfield areas. Has many advantages over other hot or cold sealers.

FLINTSEAL® (Regular—SS-S-164) and (Jet Fuel Resistant—SS-S-167b): rubber bearing, hot-poured types for durable sealing of joints and cracks to prevent leaking and provide resistance to wear under repeated freeze-thaw cycles. Meet Fed. Spec. for both types.

FLINTAR® (Regular—R-P-00355a) and (Rubberized): Coal tar pitch emulsions for sealcoating and slurry coating bituminous driveways, parking lots, roads, airfield pavements. High resistance to petroleum fuels, oils—extends life of black-top. Meet all specifications.

FLINTCRETE*: Polysulfide/epoxy compounds (grout and binder) for bonding old and new concrete in restoration and repair of pavements and structures, bonding curbs, traffic markers, skid-proofing and many other adhesive requirements. Procedures fully detailed.

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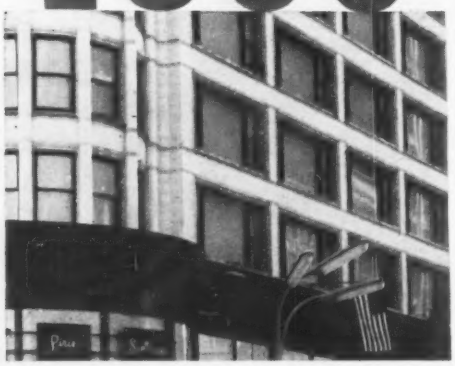
STEEL 1961

JOINS STEEL 1899



in Louis Sullivan's Architectural Masterpiece

"There was never any question of the material to be used. Steel was the proper choice for the modern eight-story addition now in construction on the famous Carson Pirie Scott building in Chicago," says Mr. Harry F. Manning of the firm of Holabird & Root, architects. ■ Designed as a completely steel-framed structure by Louis Sullivan of the world famous "Chicago School" of architects in 1899, the original building has been added to in 1903, 1906 and now in 1961. Each addition has preserved the amazingly clean and modern lines of the original Sullivan design. As in the original conception, the great cellular elevations are bold, exact and perfectly proportioned articulations of the steel frame. Steel, the building material of proven strength, durability and economy has been used again in the latest addition. ■ In the first portion of the structure, columns were formed of a combination of angles and straps of formed plate. Columns in the new section make use of modern, high-strength, wide flange beams utilizing present day steel's far greater economy and far superior carrying capacity. ■ Among architects and engineers the world over, the Chicago School of the late 1800's has long been associated with the invention and mastery of steel framing and the consequent development of today's modern structures. As many point out, the contemporary statements of today are a refinement of the principles developed as early as 1879, the articulated wall taking its power and beauty from the formal possibilities of steel framed construction.

Use Steel for Modern Construction

STEEL CONSTRUCTION PROVIDES

unlimited expansion potential

Additions to existing structures are relatively simple, with geometric steel framework repeating or augmenting the basic design of the original building. Joining new steel beams to old in the creation of new bays or even entire wings, is easier and far more economical both of time and money than is the case with most other types of building material.

design freedom

From the cube to soaring arches and space-spanning domes—from the triangle and the pyramid to tridimensional hexahedrons and tetrahedrons. From the simplest of warehouses to highrise office buildings or the complexities of church architecture, steel enhances free expression and architectural creativity.

and strength with lightness

For today's modern steels have great load-carrying capacity—minimize dead load stress—reduce foundation costs—can be fabricated into forms of the utmost lightness and grace while lending rigidity and rugged strength to the structure.

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Gandhi's Grandson Studies Post-Graduate CE at MIT

Mahatma Gandhi's grandson, Kanu R. Gandhi, a civil engineer for the Government of India, is enrolled at MIT for graduate study and working in the summer months with a Boston engineering and construction company.

The 29-year-old grandson of Mahatma Gandhi, central figure in India's long contest for independence, started graduate work at M.I.T. last February. During the summer months he is working as a structural engineer for Stone and Webster Engineering Corp. of Boston.

Russian engineers building factories in India urged him to accept offers to study in the Soviet Union, but Mr. Gandhi stuck with a longtime ambition to visit the United States. He says he intends to remain here for several years, combining study and work with travel.

"So far I have seen very little of your country, since my work keeps me busy," he says. "But I have already found Americans are a warm and open people. Before I go home I want to see much more of America and understand the best of the American way of life," he asserts.

When Mr. Gandhi continues his studies in the fall he will also act as a research assistant in engineering at M.I.T. After returning to India he will work in the tradition of his grandfather, to improve the social, economic and political conditions of his people.

Briefs . . .

Business

H. P. Cerutti, who has designed the concrete forms for many large construction projects as chief products engineer and sales manager of the heavy forms department of the Blaw Knox Corp., has joined the Dixie Form & Steel Co., San Antonio, Texas, as executive vice president and general manager. A graduate of Carnegie Institute of Technology, Mr. Cerutti served with the Corps of Engineers during World War II.

Byron E. Barnes has left his position as Metropolitan Planning Coordinator for Santa Clara County, Cal. to become Staff Planning Consultant to Daniel, Mann, Johnson, and Mendenhall, architects and engineers of Los Angeles. Besides being active in urban renewal projects, he will be responsible for several overseas projects, particularly in the Far East.

John E. Everson has been elected a partner in the engineering firm of Parsons, Brinkerhoff, Quade, and Douglas. He has been with the firm for 17 years and is presently in charge of their San Francisco office.

Clifford D. Williams, formerly a partner and director of engineering for Patchen, Mingledorff, and Williams of Augusta, Ga., heads the new firm of C. D. Williams and Associates, consulting engineers with offices in Augusta.

Public Works

David H. Meldrum, former chief of the military construction branch, North Pacific Army Engineer Division, has been assigned to Honolulu as chief of construction of the Pacific Ocean Army Engineer Division.

Paul G. Campbell, a chemist formerly with Allied Chemical Corporation, has joined the Building Research Division of the National Bureau of Standards where he will be engaged in studies of the structure and identification of the organic components of asphalt and mechanisms of the chemical degradation of asphalt under the influences of heat, light, and water.

Percy L. Blackwell has succeeded **J. Clarke Williams** as chief of the Nuclear Energy Branch, U. S. Bureau of Public Roads. His duties include development and application of nuclear science, sonic, infrared, and ultraviolet technologies to highway operations.

Henry G. Bodkin, attorney, has been elected president of the Los Angeles Board of Water and Power Commissioners. **Clifford H. Marker,** executive officer of Sav-On Drugs, was chosen vice president.

Retirements

Alf Kolflat, senior partner of Sargent & Lundy, Chicago consulting engineers, has retired from the firm with whom he has been associated since 1925. **Frank V. Smith** is his successor.

Rear Adm. Carl A. Trexel has retired as vice president of the Tudor Engineering Co. of San Francisco. A veteran of 33 years with the Navy Civil Engineer Corps, Admiral Trexel attended the Quebec and Cairo conferences that preceded offensives in Europe and Japan and was the U. S. Navy member of the British-American Committee on Artificial Harbors used in the cross channel invasion of Europe.

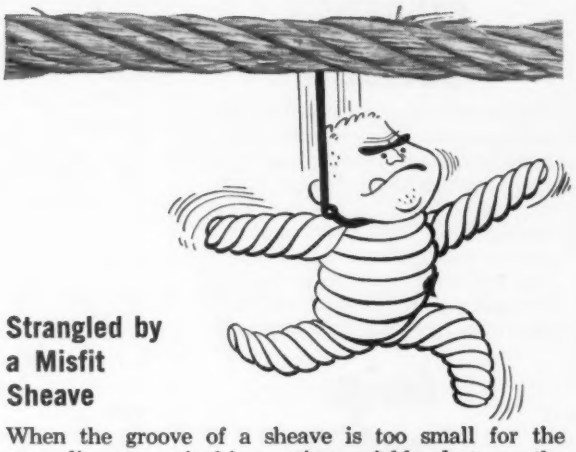
Robert N. Waid has retired after 52 years with the Ohio highway system, during which time he was state highway director from 1929-31. He has been executive secretary of the state licensing board for engineers and surveyors.

Union Wire Rope

In Union, There Is Quality That Responds

Overloaded—Soon Exploded

The rated capacity of a wire rope is based on the breaking strength (catalog) divided by a safety factor applicable to the type of service or use. The grade of steel, type of construction and size of the rope determine tensile strength. It must be properly related to the loads it will carry, or costly and dangerous early failures are likely to occur.



Strangled by a Misfit Sheave

When the groove of a sheave is too small for the rope diameter, pinching action quickly destroys the rope—especially when it's overloaded. The victim shown here was knocked out in just 1½ hours of service.

UNION Wire Rope Tuffys—Famed For Tough Job Performance

Tuffy Scraper Rope

Flexible enough to take sharp bends; stiff enough to resist looping and kinking when slack; highly resistant to the shock of load impact—that's Tuffy balanced construction. Mount a reel on your scraper—save wasting sound rope.

Tuffy Slings and Hoist Lines

Slings are a patented, 9-part machine-braided wire fabric that is next to impossible to knot or kink. Hoist lines have built-in strength, toughness, flexibility. Balanced—a top-performing team for handling every type of material. In addition to Tuffy, Union Wire Rope furnishes a complete line of slings.

Tuffy Dozer Rope

Mounts right on your dozer in a 150′ reel. When rope shows wear, just feed through enough to replace the damaged part. Saves rope, gives you a bonus of extra service. Also available in 300′ and 500′ reels.

Union Knows the Ropes—Comes Up With Solutions To Wire Rope Problems And we have 'em—more than 1600 standard constructions. Add to that the famous Tuffy family of special ropes and slings, custom-made for special needs and special uses. If none of these fit your needs, our research laboratory engineers and field staff are at your service. They'll build you just the rope or sling you need—with Union toughness and Union quality all the way. Ask your Union distributor—listed in the phone book Yellow Pages.

Tuffy Tips

New steels are born at Armco

Profitably To Proper Use

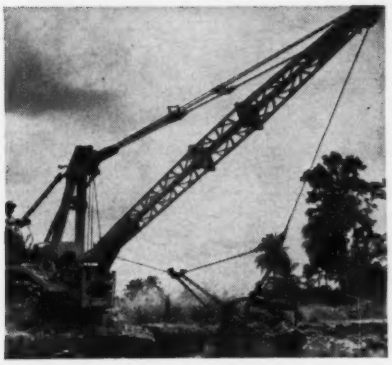
RIGHT WAY to Set Up Reel for Unwinding

The stock reel should be set up on jacks, so the rope will come from the under side of the reel.

In the picture (above), unwinding has started and the reel is turning faster than the rope is being pulled off. But no damage is done. Why? Because in coming from the under side of the reel, the rope is simply loosening, without forming loops or kinks.

WRONG WAY to Set Up Reel for Unwinding

The rope is coming from the top of the reel and forming loops as it overruns. These loops are likely to form kinks and dog legs, which can be ruinous to rope life.



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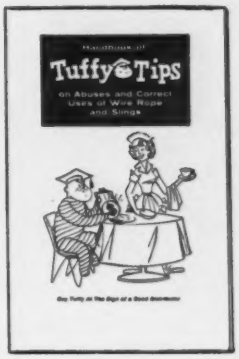
High abrasive resistance and super flexibility. Gives long service, dependable action in handling any material—wet or dry dirt, sand, gravel, rock, minerals. Rides smoothly on grooves—hugs the drum when casting for full load.

Union Wire Rope Handbook of TUFFY TIPS... Free!

The "Tuffy Tips" shown here are quoted right out of Union's handbook. In it there are dozens of other priceless hints on the correct use of wire rope. The common abuses and how to avoid them. How to save costly injuries. Maintenance tips. The proper fittings and how to apply them. Recommended sizes. Many other facts and suggestions that will cut down your rope costs and help you get out of wire rope the full service we build into it. No charge. Write Union Wire Rope, Armco Steel Corporation, 2228 Manchester Ave., Kansas City 26, Missouri.



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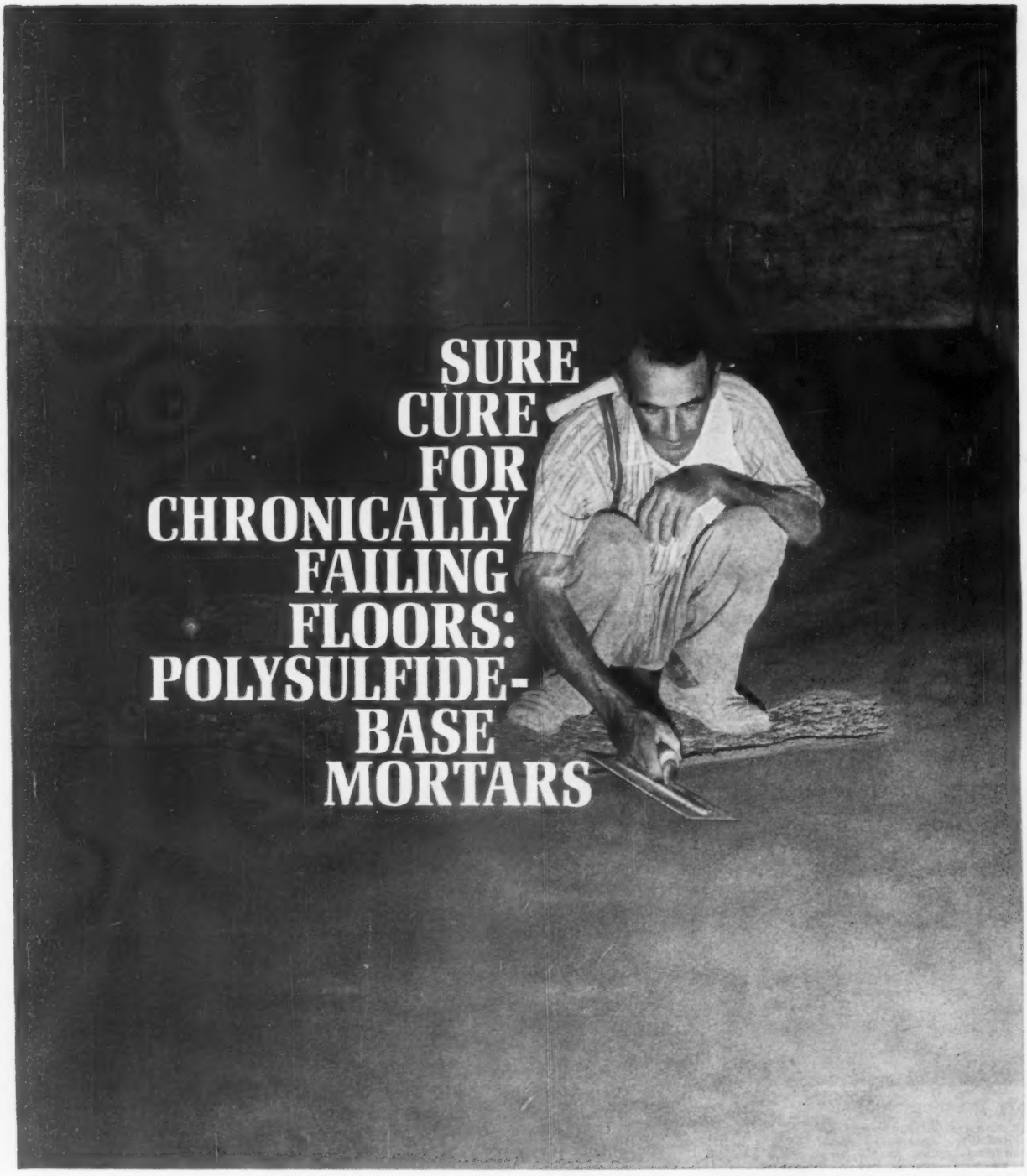
ARMCO Union Wire Rope



In more and more industrial buildings where manufacturing processes have raised havoc with conventional floors and have caused a continuing cycle of restoration, THIOKOL polysulfide-base flooring compounds are delivering long trouble-free service and decreasing maintenance costs.

THIOKOL polysulfide polymer is synthetic rubber in liquid form. It is famous for spectacular adhesion, elasticity, and resistance to oils, solvents, acids, chemicals, water and temperature extremes. As a mortar base with epoxy, it stands up to heavy traffic, abrasion, chemical attack like no other flooring compound. It can be applied over existing surfaces regardless of their composition, and has proven its serviceability in scores of installations.

Polysulfide-base mortars provide a smooth or skidproof surface, as desired—are ready for traffic in less than one day—and last for years under abusive wear and exposure to disintegrating elements. For full information, write to Thiokol Chemical Corporation at address below, for Brochure FC-100.

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Obituaries

James E. Hulick, 56, president of the Gahagan Dredging Corp., New York City. After graduating from Bucknell University and Harvard University Business School, he was associated with the investment banking firms of Kissel, Kinnecutt & Co. and Eastman Dillon & Co. before joining Gahagan in 1934.

Goodrich W. Lineweaver, 74, consultant on the staff of the Senate Interior and Insular Affairs Committee since his retirement as assistant commissioner of the Reclamation Bureau, Department of the Interior in 1955. He was with the Bureau for 17 years and headed the first salt water purification program undertaken by the government.

Herbert D. Hinman, 78, member of the board of directors of Virginia Engineering Co., Inc., of Newport News and president of the company from 1934 to 1948. After graduating from Dartmouth College, he spent 9 years assisting with the construction of the Panama Canal and then served as a civil engineer with the Navy from 1917 to 1921.

Gilbert S. Underwood, 71, architect of the State Department building and the federal courthouse in Los Angeles. A graduate of Harvard University, he established his own firm in Los Angeles in the early 1920s and later served with the Treasury Department, the Federal Works Agency and as supervising architect of General Services Administration before retiring in 1954.

Harold W. Streeter, 64, former director of the U. S. Public Health Service's Taft Sanitary Engineering Center in Cincinnati. He was the U. S. representative to the health section of the League of Nations in 1926. After retirement, he served as a consultant to the Ohio River Valley Water Sanitary Commission.

Ivan E. Oakes, 82, executive secretary of the Willamette Basin Project Committee in Oregon. A graduate of the University of Oregon, he served on the Oregon Board of Engineering Examiners and as executive secretary of the State Committee on Natural Resources. He was also a division engineer for the Western Pacific Railroad.

J. M. Fraser, 52, superintendent of some of the largest road, tunnel and mine projects in British Columbia. Among the projects he handled were the Kemano underground powerhouse, Waleach power tunnel, Shalath rock tunnel, and the Ash River tunnels.

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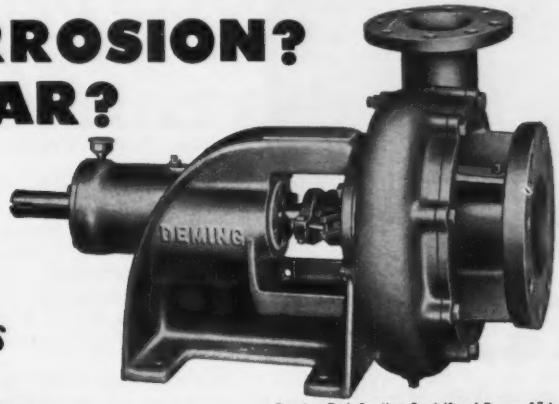
CORROSION? WEAR?



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How to Manage Engineers

ENGINEERING MANAGEMENT AND ADMINISTRATION—By Val Cronstedt. 345 pages. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $8.50.

Administrative practices recommended in this book, says Mr. Cromstedt, are planned to keep the engineer free. These administrative tools release him from the dreary paperwork functions that require highly organized and precise procedures. Discipline impressed upon one section of the engineering department—the administrators—allows engineers to devote more time to engineering.

The book was written by an experienced engineering administrator for general managers of small manufacturing firms who wish to know how their engineering departments should be operated, and for engineering managers and engineers who wish to learn by what principles they are being managed. Consulting engineers and contractors with engineering departments will find many of the principles and procedures in this book of great value.

Each chapter deals with a specific administrative subject. Formalized policies and procedures are included in appendixes. Generally capable of being directly applied to an organization, these procedures comprise the nucleus for an operational manual. Easily adaptable forms also are given.

Topics covered in the book include the structure of an engineering organization and preparation of oragnization charts, engineering orders and supplemental orders, maintenance of records, administration of budgets and financial data, compensation administration, and preparation of engineering proposals.

Briefs . . .

INFLUENCE LINES FOR PLANE AND THREE-DIMENSIONAL CONTINUOUS STRUCTURES—by Samuel Chamecki. 85 pages. Frederick Ungar Publishing Co., 131 East 23rd Street, New York 10, N. Y. $4.50

THE IMPACT OF THE PROFESSIONAL ENGINEERING UNION — by Richard E. Walton, 419 pages. Division of Research, Graduate School of Business Administration, Harvard University, Boston, Mass. $5.00

LIGHT GAGE COLD-FORMED STEEL DESIGN MANUAL—1961 edition. 115 pages. Commentary on the 1961 edition by George Winter. 60 pages. American Iron and Steel Institute, 150 East 42nd Street, New York 17, N. Y. $1.00 for manual and $.50 for commentary.

ANTENNA ENGINEERING HANDBOOK—edited by Henry Jasik. McGraw-Hill Handbook Series. 1,040 pages. McGraw-Hill Book Co., 330 West 42nd Street, New York 36, N. Y. $22.00

THE PRACTICE OF CONSULTING ENGINEERING: A MANUAL OF PRINCIPLES AND PERFORMANCE—Second edition. Consulting Engineers Council, 322 Reisch Building, Springfield, Illinois. $15.00

MODIFYING WEATHER THROUGH ARTIFICIAL RAINMAKING—Special Report publ. by the Water Information Center, 864 Willis Ave, Albertson, N. Y. $2.00.

THE TRAINING, REPLACEMENT AND UTILIZATION OF ENGINEERS AND TECHNICIANS IN THE SOVIET UNION. 112 pages. Engineering Joint Council, 29 West 39th St., New York 18, N. Y. $1.00.

FACTORS THAT INFLUENCE FIELD COMPACTION OF SOILS—by A. W. Johnson and J. R. Sallberg. Highway Research Board Bulletin 272. 206 pages. National Academy of Sciences—National Research Council, 2101 Constitution Avenue, Washington, D. C. $4.00.

DESIGN OF WELDED STRUCTURAL CONNECTIONS—by Omer W. Blodgett and John B. Scalzi. This well illustrated manual brings design of welded connections up to date. In addition to chapters covering ordinary procedures, it contains a chapter on plastic design as well as chapters on erection and welding connections for steel framing joined to existing structures. 92 pages. Lincoln Arc Welding Foundation. Cleveland 17, Ohio. $1.

ELECTRICAL CONSTRUCTION MATERIALS LIST: MAY 1961—456 pages. Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago 11, Ill.

ELECTRICAL APPLIANCE AND UTILIZATION EQUIPMENT LIST: MAY 1961—427 pages. Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago 11, Ill.

HAZARDOUS LOCATION EQUIPMENT LIST: MAY 1961—107 pages. Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago 11, Ill.

CAUSES OF VARIATION IN CHEMICAL ANALYSES AND PHYSICAL TESTS OF PORTLAND CEMENT—by Leonard Bean and John R. Dise. National Bureau of Standards Monograph 28. 24 pages. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. $.25

On So. Carolina Water Reservoir project:

HIGH OUTPUT AND MOBILITY KEYNOTE OPERATION OF RIDLEY CONCRETE GUN RIG

On the construction of the R. B. Sims Prestressed Water Reservoir in Spartanburg, South Carolina, contractor The Crom Corporation, prestressed tank builders, of Gainesville, Florida proved that concrete gunning with Ridley equipment pays off—in savings of time, and in a substantial increase of concrete placed. Working in a restricted area and placing the concrete on high vertical walls, contractor Crom shot at a rate of 500 bags of concrete per day. During this time the output of the Ridley C-3VD rig was always ahead of the crew, enabling the contractor to set his own pace and get the job done in the fastest time. Asked what he thought of the Ridley rig, president of the construction firm, Ted Crom, had this to say: "We bought the Ridley with a hope to increase our production. We like it. We are contemplating purchase of another. We find we can get increased output and we like its mobility."

The experience of The Crom Corporation with the Ridley concrete gunning rig is far from unique. Contractors throughout the country and abroad are finding that gunning concrete with Ridley is faster, more accurate and more profitable. Ridley rigs are available in models with outputs ranging from 10 to 20 tons per hour, truck or trailer mounted. Ridley rigs are ruggedly built to deliver years of service; the first rig sold five years ago is still operating and making money for its owner.

Get the full story on how you can increase your profits through gunning concrete with Ridley equipment. Mail in the coupon today.

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Gentlemen: Please send me complete information and specifications on Ridley concrete gunning equipment.

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Contract Price Limits Recovery

A contractor's recovery is limited to any balance that may be due him under the contract where there has been no breach, repudiation or recission of the contract.

One of the results of the rule is that a contractor cannot recover on the basis of the fair and reasonable value of work performed if the contract is still in force. To hold otherwise, a New York court observed, would permit contractors to escape the penalties of bad bargains.

The case before the court involved a contract for construction of a motel. The contract price was $130,000, plus or minus adjustments for additions or omissions made by mutual consent.

A dispute developed over payment. The contractor claimed payment for extras. The owner claimed deductions for inferior workmanship.

In the meantime, various subcontractors and materialmen began proceedings to foreclose mechanic's liens.

The foreclosure action was referred to a referee.

In this action, Servidone claimed that the contract price plus extras amounted to $188,505.20, of which $84,142 had been paid, leaving a balance of $104,363.20 due him. Later another cause of action was added by Servidone wherein he sought to recover on a quantum meruit (fair and reasonable value) basis. The owners counterclaimed $87,000 because of faulty work and omissions.

The referee awarded Servidone the sum of $234,500 as the total sum due under the contract. The referee, obviously had used as the only measure of the value of the work done the testimony of the two experts who placed the reasonable value of work at that figure. This sum awarded Servidone $45,994.80 more than he had asked for in the original complaint.

The owners appealed and the judgment entered on the report of the referee was modified by the appellate court[1] by limiting the amount of the contractor's recovery to $64,650, which amount was arrived at by adding to the contract price of $130,000, $18,792 for extras and deducting the sum of $84,142 that had already been paid to the contractor. The court allowed no deduction for defective work and omissions, holding that there was no substantial omission in the work and that everything that the contractor agreed to had been performed.

The finding of the referee was modified on the ground that the contractor was not entitled to recover on the basis of fair and reasonable value of the work performed, since there was no breach, repudiation or rescission of the contract and that under such conditions, the contractor's recovery should be limited to the contract price plus extras.

The appellate court stated: "In determining whether or not a contract was abandoned the conduct of the parties is closely scrutinized. It is important to note that after Servidone had substantially completed the job (he never abandoned it for purported cause) and the bickering had started over payment, it was he, Servidone, who demanded arbitration pursuant to provisions in the agreement.

His first cause of action in the lien foreclosure proceeding is based on the contract. His second cause of action on quantum meruit. A request for a third cause of action for rescission of the express contract was denied. In sum, there is no evidence to show that the contract is out. In fact all the evidence shows that it was the basis for all operations and negotiations from start to finish. It follows that the referee could not ignore the contract provisions respecting the sum due and owing from the owners to the general contractor. It must be used as the basis in calculating the award after due consideration of the extras and the faulty work and omissions.

"In Abinet v. Mediavilla, 5 A. D. 2d 679, 169 N.Y.S. 2d 231, in an action to foreclose a mechanic's lien, it was held that no contract will be implied in law as a basis for quantum meruit where an express and enforceable contract exists between the parties. Recovery on quantum meruit could be had only if the contractor shows the contract repudiated, abandoned or waived by the other party. And in Hichman v. Leary, 225 App. Div. 733, 232 N.Y.S. 177, a judgment on quantum meruit was reversed where an express contract was found. It was stated that there that as to any items not covered by the contracts, which should be proved to be extras explicitly ordered outside of the scope of the contract, a recovery might be had on the basis of quantum meruit.

This is the same principle enunciated in Keahon Bros., Inc. v. Blank, 161 Misc. 874, 292 N.Y.S. 257, where it was held that when the owner knowingly receives and accepts the benefits of extra work orally directed by himself and his agents, the owner is equitably bound to pay the reasonable value thereof, notwithstanding the provisions of his contract that any extra work must be supported by a written authorization signed by the owner, such conduct working a waiver of that requirement.

"The plaintiffs (contractors) contend that irrespective of the existence of an express contract, and irrespective of whether the performance rendered was substantial or not, plaintiffs are entitled to bring an action to recover for the reasonable value of the services rendered at the owners' request. Of course, if this were possible, any contractor who had made a poor contract could ignore it and recover in quantum meruit.

Without in some manner removing the express contract from the picture in the normal fashion (rescission, abandonment, etc.) it is not possible to ignore it and proceed in quantum meruit. This is not to say that the second cause of action should not have been pleaded. If, in fact, it had been proven on the trial that the contract had indeed been abrogated and a finding so made, then the referee would have been fully justified in proceeding with proof as to the reasonable value of the services rendered and making an award commensurate therewith upon such evidence, pursuant to the pleadings.

Since that was not the case, however, the proper method would be to use the contract price as a base, obtain the difference between extras and omissions and faulty work, and then add or subtract the result to or from the contract price, as the case might be."

(1) La Rose v. Backer, 203 N.Y.S. 2d 740, N.Y. Supreme Court, Appellate Division, July 27, 1960.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

Court Grants Blasting Damages

The law on liability for damages caused by blasting varies in different jurisdictions. Absolute liability is imposed in some areas. Others require a showing of negligence.

In a District of Columbia case, for example, two insurance companies sued a subcontractor and a general contractor to recover the money they had paid property owners for damages that resulted from blasting operations of the subcontractor. A judgment against the subcontractor that did the blasting was affirmed on appeal but a judgment against the general contractor was reversed.[1] The court held that the evidence was sufficient to justify the trial court's finding that the work was conducted negligently.

The appellate court, in reversing the judgment against the general contractor stated: "We do not believe, however, that the judgment against appellant Martin & Gass (general contractor) can be allowed to stand. It is the general rule that an independent contractor is not ordinarily liable for the negligent acts of his subcontractor. (57 C.J.S., Master and Servant, Section 609). There is no indication that Martin & Gass selected an incompetent subcontractor, that it exerted exceptional control over the blastings, or that it was in any other manner culpable so as to bring it within an exception to the rule. It is undisputed that Martin & Gass only designated the work to be done; it then left Washington Air Compressor (subcontractor) free to use the means and methods of accomplishing the assigned tasks."

As to the liability for damages due to blasting, the court stated: "A review of the decisions dealing with property damage from concussion by blasting reveals two principal theories upon which liability has been predicated. (See annotation at 20 A.L.R. 2d 1372 for a comprehensive discussion of this subject). A majority of jurisdictions apply the doctrine of absolute liability to the offending party, while a number of other states, particularly in the east, require a showing of negligence. On a minor scale, recovery has also been upheld on a nuisance theory and at least one state permits the injured plaintiff to proceed in trespass. (Ready-Mix Concrete Company v. Rape, 1958, 98 Ga. App. 503, 106 S.E. 2d 429).

"While this jurisdiction has not committed itself to the adoption of any of the aforementioned views, some indication of our general attitude with respect to highly dangerous instrumentalities was expressed in the case of Crump v. Browning, D.C. Mun. App. 1955, 110 A. 2d 695, 46 A.L.R. 2d 1212, wherein we commented that one who uses fire arms or explosives is bound to exercise the highest degree of care."

(1) Washington Air Compressor Rental Co. v. National Union Insurance Company, 165 A. 2d 482, Municipal Court of Appeals for the District of Columbia, Nov. 28, 1960.

Court Allows Contractor To Compel Arbitration

A contractor should not be deprived of his right to arbitrate a dispute if his demand for arbitration is timely.

In a New York case, for example, a general contractor began proceedings to compel arbitration of disputes with a subcontractor. He asked, at the same time, for a stay of pending action brought by the subcontractor to foreclose a mechanic's lien.

The subcontractor resisted the application for arbitration on the ground that the application for arbitration was not made within a reasonable time after the disputes arose, and on the further ground that in the foreclosure action it intended to make one of its subcontractors a party to the action.

The court[1] held that where the demand by the general contractor for arbitration of the disputes between the general contractor and the subcontractor was made within 30 days after the foreclosure action was started and before the date when final payment was due under the contract, the demand for arbitration was not untimely.

The court further held that the general contractor should not be deprived of its right to arbitration merely because the subcontractor had a claim against its own subcontractor. It was not immediately apparent how the subcontractor expected to bring its subcontractor into the foreclosure action, and there was no authority for proceeding by service of a third-party summons as proposed by the subcontractor.

(1) John H. Eisele Holding Corp. v. Panucci, 198 N. Y. S. 2d 525, N. Y. Supreme Court, Jan. 15, 1960.

(*Legal continued p. 64*)

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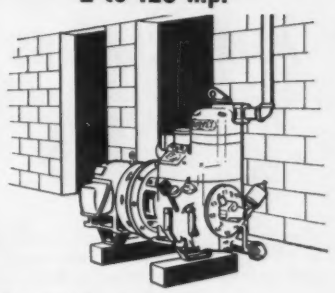

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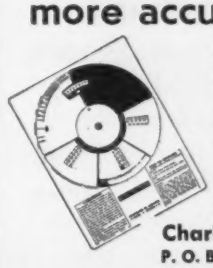

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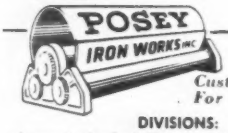

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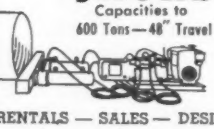

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Accord Necessary for Contract

If a general contractor and a subcontractor never reach agreement in their efforts to negotiate a subcontract, a subcontract does not exist and there can be no breach of contract.

Some of the technicalities of contract negotiation are discussed by a federal court in a case involving a portion of the Massachusetts Turnpike. The general contractor thought he had a subcontract—but the court said he did not.

The trouble started when the general contractor asked D'Onfro, a subcontractor, for a bid. When the bid came in, he said it was too high.

A series of meetings followed. The work and the price were discussed. The proposed contract was drafted, revised, redrafted and exchanged several times. In the final exchange of drafts, the general contractor made several changes, signed it and returned it to the subcontractor. The latter refused to sign it.

In the meantime, the subcontractor had delivered two performance bonds that stated that a contract had been concluded as of a certain date.

The general contractor then brought an action to recover damages for breach of contract. The action was dismissed by the trial court and the judgment was affirmed on appeal.[1]

The court held that where, after negotiations, the contractor drafted a contract and delivered it to the general contractor, who made deletions, without the contractor's manifested assent, and returned the signed draft to the contractor, the subcontractor's subsequent compliance with the general contractor's request for a copy of the draft did not constitute an acceptance of the terms of the proposed contract.

The subcontractor's surety was made a co-defendant in the action. As to this phase of the litigation, the court held that where parties to negotiations for a construction contract contemplated the execution of a formal contract, and the surety company had issued a performance bond which stated that a contract had been made at a stated date, the surety could still deny the existence of any contract.

(1) Lizza & Sons, Inc. v. D'Onfro, 282 F. 2d 175, U.S. Court of Appeals, First District, August 18, 1960.

Court Will Not Upset Arbitration

An arbitration award will not be reviewed or set aside under Pennsylvania law in the absence of a showing that the arbitrators exceeded their powers.

The following case shows how the law applies:

A construction contract contained the following provision: "In case the Owner and Contractor fail to agree in relation to matters of payment, allowance or loss referred to in certain Articles of this contract . . . then the matter shall be referred to a Board of Arbitration to consist of one person selected by the Owner, and one person selected by the Contractor, these two to select a third. The decision of any two of this Board shall be final and binding on both parties hereto. Each party shall pay one-half of the expense of such reference."

A contractor sued to recover a sum he claimed was due under the contract. The matter was referred to arbitration and the arbitrators made an award in favor of the contractor.

The owner asked the court to set aside the award. He contended that the arbitrators, in making the award, exceeded their powers because they engaged in contract interpretation. The court denied the application. The decision was affirmed on appeal.[1]

The appellate court pointed out that Pennsylvania Statute, Act of 1927, P.L., Section 381, No. 248, by its Section 10 (P.S. Section 170), limits the power of a court to vacate awards and direct a re-hearing only upon grounds that the award was procured by corruption, fraud or undue means; partiality or corruption of the arbitrators; prejudicial misconduct of the arbitrators, or action in excess of their powers or with such imperfection that a final definite award was not made.

The court held that the record failed to show that the arbitrators exceeded their powers. The appellate court stated: "It is well settled in Pennsylvania that an award in such case will not be reviewed or set aside; Westinghouse Air Brake Co. Appeal, 166 Pa. Super. 91, 70 A. 2d 681; Wirkman v. Wirkman, 392 Pa. 63, 139 A. 2d 658; Aster v. Jack Aloff Co., 190 Pa. Super. 615, 155 A. 2d 627."

(1) Majcher v. Bronder, 165 A. 2d 251, Supreme Court of Pennsylvania, Nov. 15, 1960.

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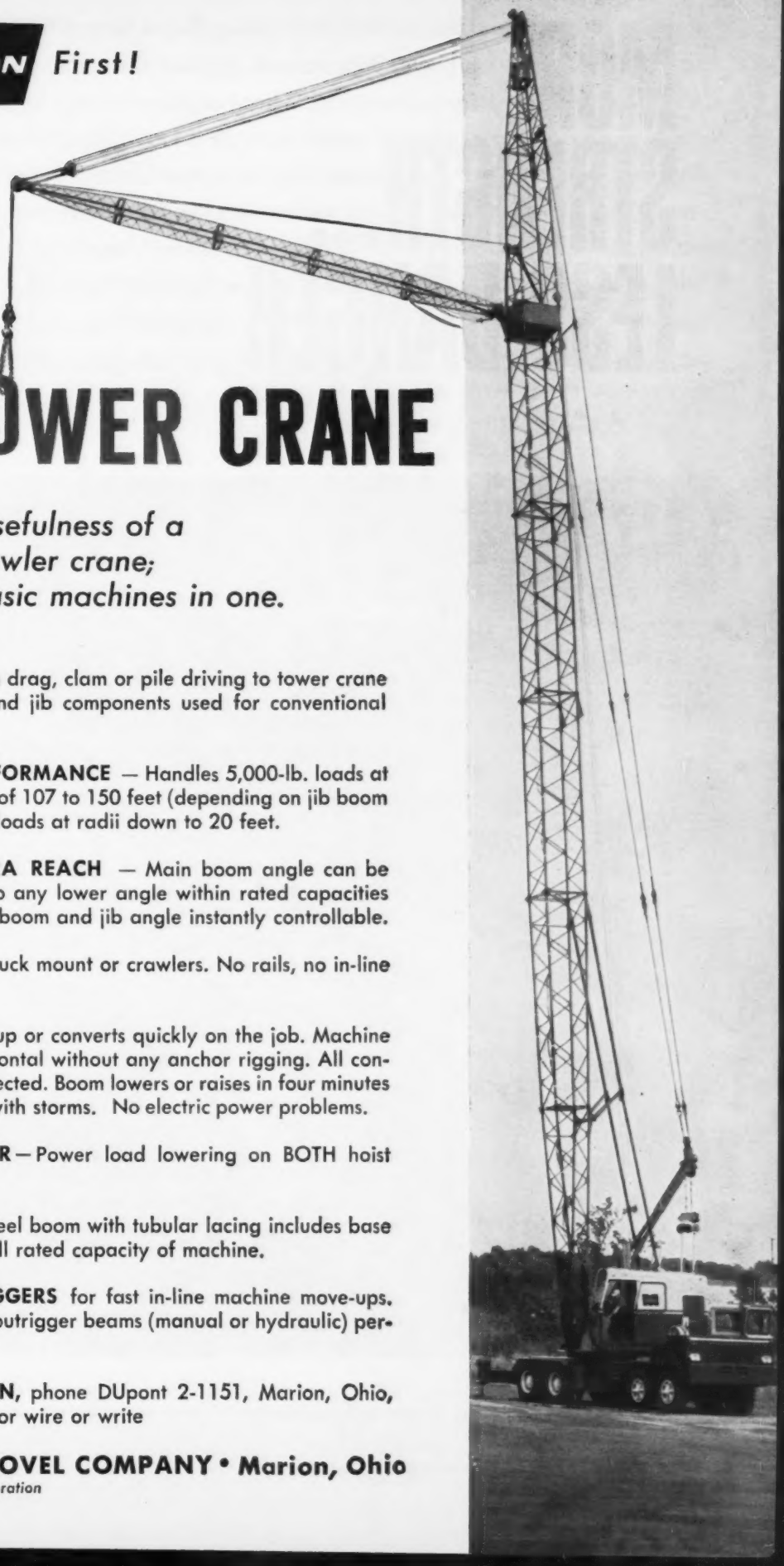

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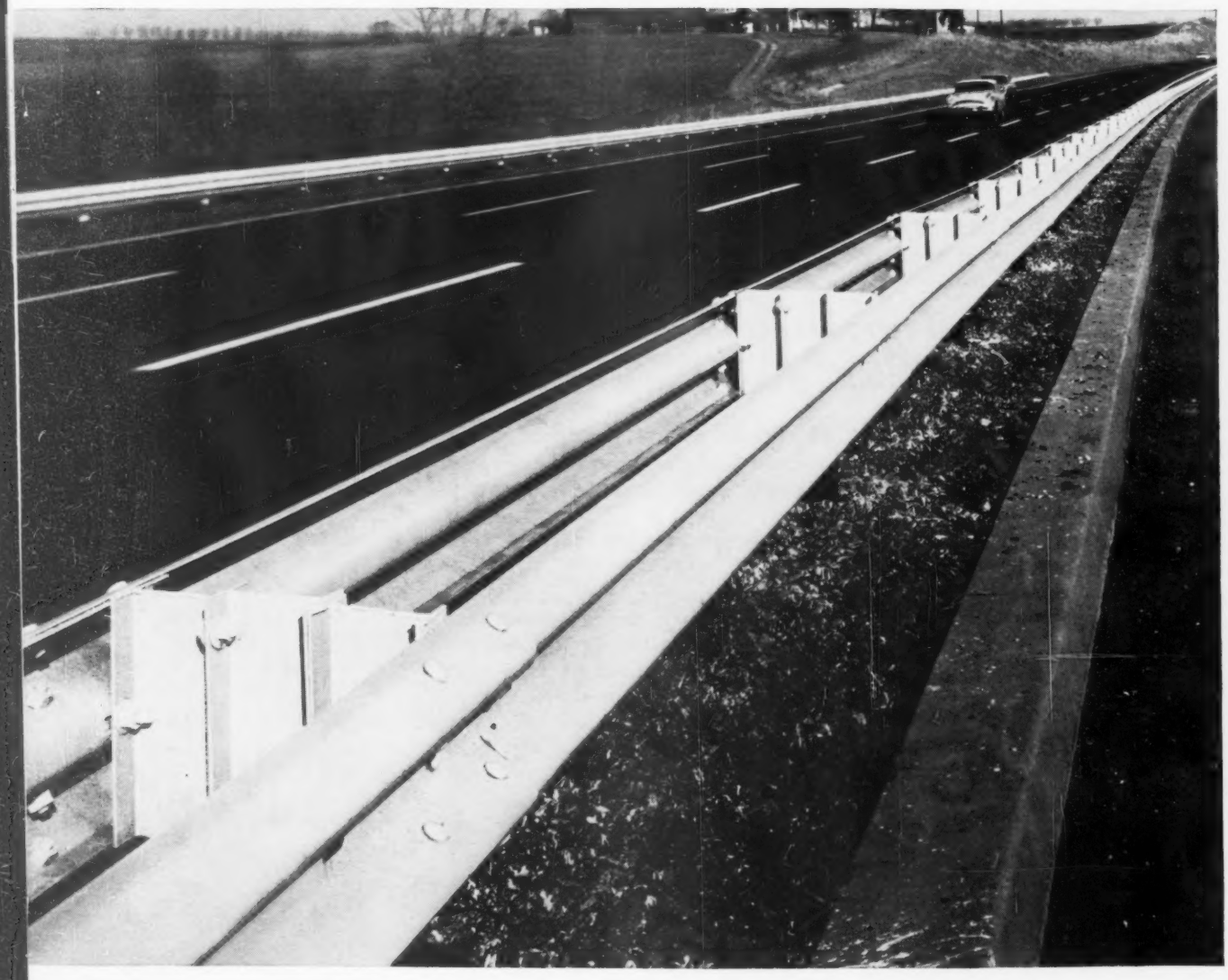

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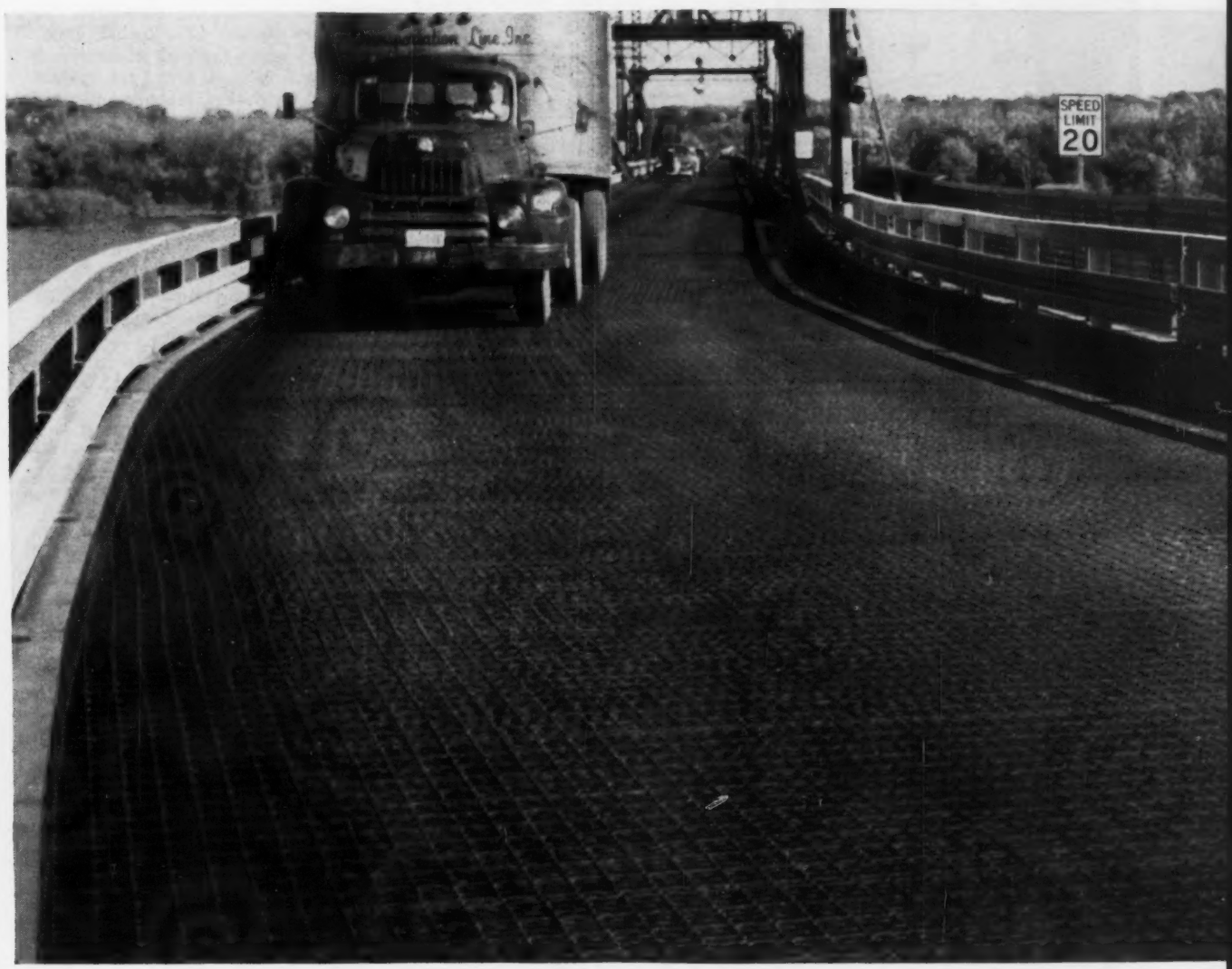

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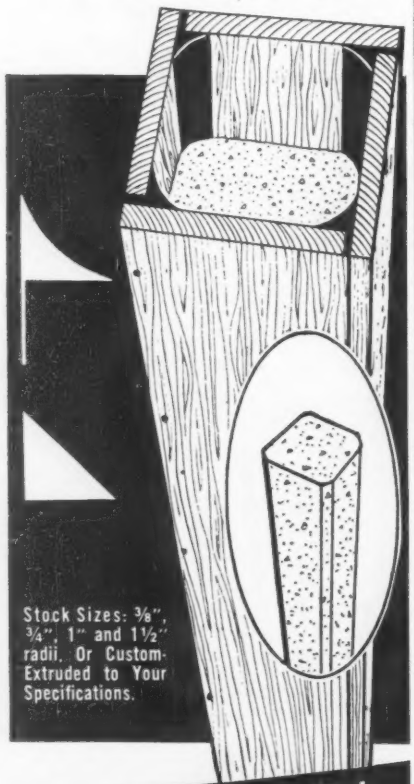

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New Mexico School Goes Underground

Here is how W. R. Bauske & Co. of Clovis, N. M., priced an experimental underground school and fall-out shelter in Artesia, N. M. The school is completely underground with only a cement playground visible on the surface. Frank Standhardt of Roswell, N. M., was chief planner for the underground structure.

1C W. R. Bauske & Co., Clovis, N.M. $467,608
EE Frank M. Standhardt, Roswell, N.M.,
if const above ground only 350,664
with const underground 479,621

Bids: 5-4-61 Items	Unit	Quantity	UP, 1C	$/sq ft
Plant & equip	ls	job	$1,824	0.054
Bond	ls	job	4,676	0.138
Administration & permits	ls	job	10,032	0.297
Excavation, mass	cy	10,102	0.90	0.269
Backfill & grading	cy	7,125	1.25	0.263
Excavation, trench	cy	102	4.00	0.012
Conc work	cy	3,666	21.00	2.28
forms	sf	70,000	0.50	1.036
Fin slabs, 3"	sf	27,453	0.40	0.325
4"	sf	28,233	0.50	0.421
Insulating slab, 3"	sf	27,453	0.40	0.325
Curb, conc	lf	592	1.50	0.026
& gutter	lf	624	1.60	0.026
Sidewalks	sf	4,850	0.50	0.072
Paving	sy	2,495	2.00	0.147
Steel, reinf	lb	200,000	0.15	0.888
Mesh, 6-6-10-10	sf	35,000	0.05	0.052
Steel, str	lb	14,200	0.20	0.081
roof deck	sf	4,396	0.50	0.065
Masonry	ls	job	95.00	0.0026
Carpentry	ls	job	4,000	0.119
Roofing, waterproofing, sheet metal	ls	job	9,642	0.256
Doors, steel & frames	ls	job	3,850	0.285
Millwork, chalkboard, tackboard	ls	job	20,764	0.615
Metal lath & Plastering	sy	6,710	5.00	0.993
Finish hardware	ls	job	4,650	0.138
Glass & glazing	ls	job	465.35	0.013
Floor covering, resilient	sf	20,310	0.32	0.014
Tile, ceramic	sf	4,492	2.00	0.266
Painting	ls	job	6,294	0.186
Plumbing, heating, air conditioning	ls	job	92,500	0.274
Electrical	ls	job	27,650	0.818
Metals, misc	ls	job	469.00	0.014
Elevator	ls	job	5,600	0.166
Furnishings & special equipment	ls	job	13,518	0.403
Cost per square foot				$13.85

The eighteen classroom elementary school will cost $467,608, about $25,000 more than it would cost to build the same school above ground. The difference between the estimate for the school above ground, and costs arising from underground construction and civil defense installations, will be covered by U.S. government funds. At $13.85 a square foot, the 33,767 sq ft building is $5.85 over the town's $8.00 average cost for school construction.

The school will accommodate 540 students under normal conditions and 1,940 persons under emergency use as a shelter. Experts believe the experimental building would be safe from radiation effects or fall-out, and tests will be made to determine the effects on pupils and teachers of the absence of sunlight, windows, natural air, and other contacts with life above ground.

The school's "roof" will be about 6 ft below ground, and the one-story building reached through two subway-like entrances. Elevators will be used to lower supplies and equipment.

Minimum wage rates include: skilled labor, $3.50/hr; semi-skilled, $2.68; and common, $2.275.

Excavation Takes 47% of Colorado Highway Costs

Hubner Construction Co., Denver, Colo., took this $1,252,842 roadway contract 6% under the second low, Pioneer Construction Co., Pueblo, Colo., and 18% under the high of seven bidders. Bidding $1.00 a yard for 585,000 cu yd of excavation, Hubner under bid the five lowest bidders by $0.01 to $0.40 a unit. R. C. Hopper, Idaho Springs, Colo., is the resident engineer for the State Highway Department.

The 36-ft roadway starts at Berthoud Pass, elevation 11,307 ft. It has a maximum horizontal curvature of 42°33'. Maximum grade will be 6.4% and minimum, 0.4%. Elevation drops along this six mile section of new road to 9,773 ft at its lower end.

Wage rates include: common, $2.50/hr; skilled $3.40; semi-skilled, $3.00.

The bidding included:

1C Hubner Const. Co., Denver, Colo. $1,252,842
2 Pioneer Const. Co., Pueblo, Colo 1,346,076
7 Schmidt Const. Co., Arvada, Colo 1,534,720
EE State Hwy. Dept., Denver, Colo 920,480

Bids: 5-23-61 Items	Unit	Quantity	Unit Prices 1 C	2
Clear & grub, entire job	ls	job	$100,000	$85,000
Structures, remove 37	ls	job	1,000	5,000
Cribbing, remove	ls	job	250.00	2,500
Culv, conc box, remove	ls	job	250.00	1,000
Headwalls, remove	ea	5	50.00	500.00
Guard posts, remove	ea	15	1.00	3.00
Culv, plug	ea	10	15.00	50.00
Fence, guard, remove	lf	3,560	0.40	1.00
Exc, uncl	cy	585,000	1.00	1.10
ditch	cy	4,500	0.50	1.50
Stripping	cy	2,000	0.20	0.25
Backfill, str, cl 1	cy	960	2.00	3.00
Compaction, mod	cy	559,000	0.08	0.05
Wetting	Mgal	11,150	1.00	1.00
Water, dilut emul asph	Mgal	560	0.50	25.00
Overhaul, sta yd	stay	3,264,000	0.02	0.01
yd mi	ymi	111,500	0.15	0.15
ton mi	tmi	89,000	0.10	0.20
Gravel, surf C	t	59,100	1.20	1.50
Tmbr, untr, misc	Mfbm	2.80	500.00	600.00
Conc, cl A	cy	218	70.00	100.00
Steel, reinf	lb	8,900	0.15	0.20
Pipe, relay, 24"	lf	610	3.00	3.00
CMP, culv, 8"	lf	72	4.00	4.00
24"	lf	3,881	7.00	8.00
60", 8ga	lf	208	30.00	35.00
transpt & instl 18"	lf	104	4.00	6.00
24"	lf	132	4.00	7.00
Grout rubble slope ditch paving	cy	10	15.00	50.00
Riprap	cy	200	6.00	10.00
Underdrain, perf, 8"	lf	1,195	4.00	7.00
12"	lf	5,014	5.00	9.00
Exc, uncl str, misc	cy	9,950	2.00	3.00
Backfill, str, special	cy	9,210	2.30	2.00
Cribbing, conc, precast,				
A-A	sf	2,033	6.00	6.00
B-B	sf	3,525	6.50	6.50
C-C	sf	12,172	7.00	7.00
D-D	sf	10,762	8.00	8.00

ENR Const. Cost Index (1913 = 100) 20-cities avg.—847.32

Materials Prices

Monthly Market Quotations by ENR Field Reporters

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See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, July 27; Next, Aug. 31.
- Wage Rates, Building Board, Lath, Insulation: Last, Aug. 3; Next, Aug. 31.
- Cement aggregate, Ready-Mixed Concrete, Asphalt: Last, Aug. 10; Next, Sept. 7.
- Iron & Steel Products Pipe: Last, Aug. 17; Next, Sept. 14.

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
LUMBER, TIMBER																							
1x6s4s Pine	Mbf.	81.00	+84.00	80.00	.....	−103.00	91.00	−93.00	105.50	.....	−106.00	110.00	.....	.....	−83.00	−92.00b	.....	−84.00	84.00	.....	.....	79.00c	85.00c
Fir			*−90.00*	*102.00*		*−101.00*	*92.00*				*−98.00*	*110.00*	*−77.50*	*+92.75*	*+96.75*	*−99.00*		*−98.00*	*−99.00*	*−78.00*	*60.00*		
1x8s4s Pine	"	−83.00	−84.00	83.00	.....	−105.00	93.00	−97.00	105.50	.....	−108.00	110.00	.....	.....	−85.00	−94.00b	.....	−84.00	+88.00	.....	.....	81.00c	88.00c
Fir		.....	*−90.00*	*97.50*	*103.00*	*−105.00*	*94.00*	.....	.....	.....	*−100.00*	*110.00*	*−72.50*	*+92.75*	*+96.75*	*−101.00*	.....	−84.00	−99.00	−78.00	65.00	.....	.....
2x4s4s Pine	"	−80.00	−84.00	87.00	100.00b	−107.00	98.00	+105.00	107.50	.....	−102.00	105.00	.....	.....	+95.00	−95.00b	−100.00b	−84.00	−92.00	.....	.....	79.00c	85.00c
Fir		.....	*−106.00*	*129.00*	*110.00*	*−110.00*	*110.00*	*−111.00*	.....	*−99.50*	*−109.00*	*110.00*	*−83.50*	*103.50*	*−107.75*	*−100.00*	*−105.50*	*−114.00*	*−102.00*	*−86.00*	*73.00*	.....	*+108.00*
2x6s4s Pine	"	−81.00	86.00	85.00	100.00b	−107.00	98.00	+99.00	107.50	.....	−112.00	110.00	.....	.....	−90.00	−95.00b	−96.00b	−86.00	91.00	.....	.....	79.00c	81.00c
Fir		.....	*−106.00*	*119.00*	*110.00*	*−110.00*	*110.00*	*−109.00*	.....	*−98.50*	*−103.00*	*115.00*	*−82.50*	*102.50*	*−107.75*	*−100.00*	*−104.50*	*−114.00*	*−102.00*	*−86.00*	*73.00*	.....	*−107.00*
2x8s4s Pine	"	−83.00	−88.00	87.00	100.00b	−112.00	98.00	+104.00	−123.50	.....	116.00	110.00	.....	.....	−90.00	−95.00b	−98.25b	−90.00	+93.00	.....	.....	95.00c	87.00c
Fir		.....	*−111.00*	*119.00*	*110.00*	*−111.00*	*110.00*	*−109.00*	.....	*−97.50*	*−112.00*	*115.00*	*−83.50*	*105.25*	*−108.25*	*−100.00*	*−108.75*	*−114.00*	*−103.00*	*−86.00*	*73.00*	.....	*+116.00*
2x10s4s Pine	"	−88.00	−90.00	93.00	115.00b	−115.00	105.00	+110.00	−123.50	.....	−120.00	120.00	.....	.....	105.00	−91.00b	−100.50b	−93.00	−104.00	.....	.....	125.00c	87.00c
Fir		.....	*−111.00*	*122.00*	*120.00*	*−116.00*	*115.00*	*+112.00*	.....	*−100.50*	.....	*120.00*	*−83.50*	*111.75*	*−113.75*	*−103.00*	*−110.50*	*−116.00*	*113.00*	*−86.00*	*75.00*	.....	*−116.00*
3x12Rgh Pine	"	−103.00	+118.00	105.00	.....	−125.00	112.50	.....	−137.50	.....	.....	.....	.....	.....	−120.00	−113.00b	.....	−118.00	125.00	.....	.....	.....	87.00c
Fir		.....	*−126.00*	*133.00*	.....	*−126.00*	*130.00*	*+130.00*	.....	*−116.50*	.....	*140.00*	*−91.00*	*−112.25*	.....	*−120.00*	*−127.75*	*−132.00*	*125.00*	*−92.00*	*87.50*	.....	*123.00*
6x12Rgh Pine	"	−113.00	−126.00	105.00	.....	.....	135.00	.....	.....	.....	.....	.....	.....	.....	−125.00	−113.00b	.....	−118.00	132.00	.....	.....	.....	.....
Fir		.....	*+136.00*	*135.00*	.....	*−127.00*	*130.00*	*+130.00*	.....	*−114.50*	.....	*140.00*	*−91.00*	*−120.50*	*−125.75*	*−120.00*	*−123.75*	*−132.00*	*132.00*	*−114.00*	*91.00*	.....	*127.00*
12x12Rgh Pine	"	−128.00	−128.50	120.00	.....	.....	135.00	.....	.....	.....	.....	.....	.....	.....	.....	−118.00b	.....	−118.00	132.00	.....	.....	120.00c	.....
Fir		.....	.....	*133.50*	.....	*−127.00*	*130.00*	*+130.00*	.....	*−107.50*	.....	*140.00*	*−91.00*	*−118.50*	*−122.75*	*−125.00*	*−117.75*	*−125.00*	*132.00*	*−115.00*	*91.00*	.....	*+127.00*
FIR PLYWOOD (a)																							
⅜" Int. Plyscored, CD gr.	Msf.	125.00	128.00	131.80	−118.90	135.00	130.45	−124.50	123.00	110.25	−118.45	135.00	−95.80	−117.00	122.25	127.20	127.50	127.50	119.37	97.00	94.00	119.25	.....
¾" Exterior Plyform, BB gr.	"	215.00	218.50	223.00	216.40	225.00	214.70	215.00	210.00	210.00	−209.20	215.00	−152.60	208.05	201.95	215.60	215.60	215.60	205.93	180.50	180.00	225.95	225.00

Fir-Random length, 75% construction grade, 25% standard grade, 30,000 bf, green stock, grademarked. Pine-Random length, #2 common and better, Southern Pine Inspection Bureau grademarked, 30,000 bf. Lumber prices include freight from mill to city and cost of unloading and trucking full carlot to jobsite. •a Certificated stock ,carlots, fob city. •b Hemlock, 75% construction grade, 25% standard grade. •c Spruce. Fir plywood prices, per Msf, fob Northwest mill: CD grade interior sheathing—½" $84, ⅝" $94; BB grade Plyform—⅝" $155-$160, ¾" $175-$180

WINDOW GLASS, Discounts from Jobber's list, Feb. 1, 1950 (a) sales tax extra—single or double strength

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
A quality	78%	74%b	82%c	70+10%eg	70%	72%	72-2-10%	70%	73%-10	72-10-10%	76-10-10%	$12.88/17.32	70-10%	76%d	79%	80%	76%	74-10-10%ef	60%	$8.85/11.55di	40-10-5%a	$6.49/9.50
B quality	80%d	74%b	83%c	70+10%eg	70%	72%	72-2-10%	70%	73%-10	72-10-10%	76-10-10%	$10.45/14.13	70-10%	76%d	79%	80%	76%	74-10-10%ef	73%	6.41/8.07di	40-10-5%a	5.90/8.77

Glass: •a Jobber's list price per box, 14 x 20, ss. $42.75 for A quality, $37.50 for B quality; 14 x 20, ds. $60.00 for A quality, $52.75 for B quality. •b sales tax extra. •c 77% for single strength. •d From 6/15/52 list. •e 77% for double strength. •f Single strength; double strength, 83%. •g From 8/1/58 list. •h ss/ds, 40-in. •i 20 boxes min. •j eff. 10/15/58. •m less 2% disc, 10 days. •n less 1% disc, 10 days. •o add 2% sales tax. •p less 1% for cash. •q less 2% for cash.

EXPLOSIVES per lb, 40% Ammonia Gelatin in 50 lb cases delivered in 500 lb lots (non-seismograph grades)

Urban Areas	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
	$0.2595	$0.2795	$0.2595	$0.2795	$0.2795	$0.2595	$0.2595	$0.2870	$0.2795	$0.2795	$0.2795	$0.2795	$0.2795	$0.2795	$0.5130g	$0.2795	$0.2595	$0.2795	$0.2795	$0.2795	$23.20h	.....

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. •g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. •h fob Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60% $24.30 in fiber cases; forcite 40%, $24.05; forcite 60%, $25.80. Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Non-Urban Areas	C/L 30,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.21.95	$0.22.95	$0.26.45	$0.27.95
Group 2†	.22.70	.23.70	.27.20	.28.70

*All areas except those in Group 2 and N.J. cities of Bayonne, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman ,McCulloch, San Saba, Burnet, Williamson, Milan Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES prices per linear foot, fob cars, New York

Dimensions	Points	Length	—By Rail— Pine* §	Fir	Dimensions	Points	Length	—By Rail— Pine* §	Fir
12" at butt	6-in.	30 to 39-ft.	$0.42a	....	14"—2-ft. from butt	6-in.	65 to 69-ft.	1.21	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.91	....	14"—2-ft. from butt	6-in.	70 to 74-ft.	1.34	$1.40
12"—2-ft. from butt	6-in.	45 to 49-ft.	.97	....	14"—2-ft. from butt	6-in.	75 to 79-ft.	1.41	1.40
12"—2-ft. from butt	6-in.	50 to 54-ft.	1.01	....	14"—2-ft. from butt	5-in.	80 to 84-ft.	1.54	1.45
12"—2-ft. from butt	6-in.	55 to 59-ft.	1.07	....	14"—2-ft. from butt	5-in.	85 to 89-ft.	1.67	1.54

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B •a, trucked in from N. J.
Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid/South, over fifty feet ,on freight from deep south.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 9" x 8'6" Untr.	7" x 9" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	2.85-3.00	4.00a-4.10	3.90	4.75
New York	Mixed Hardwood	3.45	5.10	4.30	6.50
	Mixed Oak	3.55	5.20	4.40	6.60
Philadelphia	Mixed Oak	3.80	3.97	4.37	4.65-4.75
St. Louis	Mixed Oak	2.65b	3.75b	3.05b	4.10b
San Francisco	Douglas Fir	2.25e	3.65e	2.60ef	3.70ca

Tr.—Treated; Untr.—Untreated. •a Creosoted. •c Empty cell. •e Green •f f.o.b. cars. •g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. •h 7" x 9" x 8½. •i Mixed Hardwood

CHEMICALS Water, sewage treatment, road work, carlots, f.o.b. works

Chlorine cylinders, liquid, per lb. freight allowed, N. Y. State	$ .11	Silicate of soda, 52 deg., in drums, per 100 lb.	2.65
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, ton	32.00	Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
		Sulphate of aluminum, commercial, in 100-lb. bags	2.05
		Sulphate of copper in bags, 99% per 100 lb., reg., 25.2% copper content	12.50

Bid Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Leominster** — BA 9/14 — City, High School Bldg. Comn., City Hall, HIGH SCHOOL, Granite St. $3,479,000. Extended date. L. W. Briggs & Assoc., Inc., 90 Park Ave., Worcester, archt. Francis S. Harvey, 141 Dewey St., Worcester, struct. engr. CD 7/25/61.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS** — Commonwealth Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 8/15, ROAD,
Bayer & Mingolla Constr. Co., Inc., P.O. Box 991, Worcester, Mass., LB **$3,143,191,** est. $3,333,297, section relocated Rte. 2 U-348(14), Gardner. CD 8/11/61.

▲ **MASSACHUSETTS**—Commonwealth Mass., Dpt. P. Wks., 100 Nashua St., Boston, ROAD,
Central Constr. Co., 79 Beacon Ave., Lawrence, Mass. and **Henley-Lundgren Co.,** 193 Hartford Pike, Shrewsbury Mass., CA **$3,654,653,** relocation Rte. 3. Proj. F-355(12), Hanover-Norwell-Marshfield-and Pembroke. BA 7/11, CA 8/8. CD 7/13/61, under LB

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford, Bids opened 8/14, ROADS,
White Oak Excavators, Inc., 61 East Main St., Plainville, Conn., LB **$4,651,776,** (3 bidders), 12.469 lin. ft. grading, drainage, triple 20 x 20 ft. box culvert over Hockanum River Approach from Founders Bridge, connections between Interstate 84 and East Hartford Hy. Proj. 42-127, 42-131, 42-129 and 42-130, East Hartford. CD 7/26/61.

BUILDINGS—LB & CA

▲ **Roland Aubin,** Pleasant Valley Rd., South Windsor, Conn., Owner Builds, **$2,200,000,** 220 HOUSES, Christy Hill Estates, Second Section, LEDYARD, CONN. CD 8/3/61.

▲ **Anderson-Fairoaks Constr. Co.,** 227 Newfield Ave., Hartford, Conn., LB **$2,673,000,** St. Ambrose SEMINARY AND CHAPEL, Rte. 5A, SUFFIELD, CONN. Redemptorist Fathers, 5 East 74th St., New York, N. Y. BA 7/26/61. CD 7/12/61.

▲ **A. F. Peaslee, Inc.,** 37 Lewis St., Hartford, Conn. LB **$1,925,000,** (7 bidders), JUNIOR HIGH SCHOOL, WINDSOR LOCKS, CONN. Town, School Bldg. Comn., Church St., Windsor Locks, Conn. BA 8/10/61. CD 8/1/61.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., Rochester**—BA 8/31—Monroe Co., Court House, TERMINAL BLDG. EXPANSION, Rochester-Monroe County Airport. $2,000,000. Benedict Ade, 840 University Ave., Zone 7, archt. CD 11/20/47.

▲ **N. Y., New York**—BA 9/22—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, furnishing, installing modern BLOCK SIGNAL and INTERLOCKING SYS. for Broadway-7th Ave. Line, IRT Div., Section 1, 96 St. to 157 Sts. Section 2, 157 St. to 242 St. incl. 240 Street Yard, Contr. S-104, Manhattan and Bronx Boros. Plans deposit $6. CD 8/31/54.

BUILDINGS—BA

▲ **N. Y., Brooklyn**—BA 9/6—New York City Housing Auth., Rm. 312, 299 Broadway, New York, Zone 7, (1) fdns. and general constr., (2) heating and ventilating, (3) electrical work, (4) plumbing work at Jonathan Williams HOUSES, Proj. No. NYS-101, Marcy Ave., Division Ave., Roebling St. and Broadway excluding certain portions of area along Broadway, Brooklyn Boro, $10,855,000. Plans deposit $75; furnishing and installing ELEVATORS Jonathan Williams Houses. Plans deposit $25. CD 7/10/59.

▲ **Pa., Pittsburgh**—BA 9/12—Pittsburgh Housing Authority, 200 Ross St., Hamilton-Larimer Ave. HOUSING PROJECT, East Liberty, $6,000,000. CD 5/29/52.

▲ **N. Y., Amherst**—BA 9/15—Forest City Enterprises, 16903 St. Clair, Cleveland, O., HAC MALL SHOPPING PLAZA. $10,000,000. Lathrop Douglas, 518 5 Ave., New York, N. Y., archt. Leon Selzer, 200 W. 57 St., New York 19, N. Y., engr. CD 1/3/61.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg. Albany, Bids opened 8/10, ROADS,
N. Y.—**Slattery Contg. Co., Inc., Fehlhaber Corp.** and **Terry Contg. Corp.,** 46-36 54 Rd., Maspeth 78, N. Y., LB **$11,729,879,** est. $15,369,000, (7 bidders), 0.8 mi. 1.33 acc. mi. Interstate Rte. connection 512 Gowanus Expressway Contr. 6, 3rd Ave. at 53 St. to 4 Ave. at 65 St., Int. Trg. Rte. 278, FIGE 61-2, Kings Co.;
N. Y.—**Slattery Contg. Co., Inc.,** 46-36 54 Rd., Maspeth, N. Y., LB **$20,699,152,** est. $24,070,000, (5 bidders), 2.02 (7 acc.) mi. Interstate Rte. Conn. 515 Northern Blvd. Cont. 1 (Grand Central Parkway to Flushing River) Van Wyck Expressway Exten. (at Flushing River Interchange), Grand Central Parkway, FINB. 61-1, FAVWE. 61-2, FAGCP. 61-2, Queens Co.;
N. Y.—**D. W. Winkelman Co., Inc.,** 300 Long Branch Rd., Syracuse, N. Y., LB **$1,956,262,** est. $2,306,000, (6 bidders), 2.4 (4.1 acc.) mi. Interstate Rte. 505 (Syracuse-Mattydale, SH 54-3 incl. interchange with New York State Thruway and 7 North St. C.R. 221), Int. Trg. Rte. 81, FIRC 61-128, Onondaga Co. CD 7/12/61.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 8/10, BRIDGE,
Queens Structure Corp., 32-57 57 St., Woodside 77, N. Y., LB **$1,759,112,** est. $2,209,000, (8 bidders). Woodhaven Blvd. bridge 0.34 mi. over Long Island RR. FAWB. 61-1, Queens Co. CD 7/12/61.

▲ **Johnson Electrical Corp.,** 206 E. 29 St., New York 16, N. Y., CA **$2,949,091,** Contr. 361, UNDERGROUND ELECTRICAL and COMMUNICATION CONDUIT SYS. for Permanent Park Use incl. temporary New York World's Fair 1964-1965 constr., Flushing Meadow Park, Queens Boro, FLUSHING, N. Y. Comr. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 1, N. Y. BA 7/6, CA 8/10. CD 7/10/61, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 8/10, ROADS,
Franklin Contg. Co., U. S. Hy. 46, Little Falls, N. J., LB **$2,082,674,** (7 bidders), grading, paving and bridges 1.479 mi. Interstate Rte. 287, Sections 13B and 14A, from Vreeland Ave. to Rte. 202, Proj. I-287-3(9)43, Boonton, Morris Co. CD 7/6/61.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 8/11, ROADS,
Public Constructors, Inc., Erial Rd., Blenheim, Blackwood, N. J., LB **$3,904,334,** (2 bidders), grading, paving, bridges 1.667 mi. Interstate Rte. 287 from New Durham Road to Prince St., Proj. I-1G-287-1(19)2, Middlesex Co. CD 7/24/61.

▲† **American Dredging Co.,** 12 South 12th St., Phila., Pa., CA **$5,821,200,** DREDGING Delaware River Section D 7, D 8A, near Bristol, Pa., and Burlington, N. J., ENG-30-109-61-66, PENNSYLVANIA and NEW JERSEY. U. S. Eng., 2635 Abbotsford Ave., Phila., Pa. BA 7/6/61. CD 7/21/61, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, ROADS,
Glasgow, Inc., Glenside, Pa., CA **$1,748,922,** 35,300 ft. existing pavement width conc. base variable in width, T.R. 1, Delaware Co. BA 7/20/61. CD 7/25/61, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened Aug. 11, ROADS,
Pa.—Allegheny Contracting Industries, Inc., 801 Bingham St., Pittsburgh 3, Pa., LB **$5,213,799,** 25,445 ft. separated RCC Hy. 24 ft. wide each side earth median, 7 bridges, L.R. 1009(4) Interstate, sect. Keystone Shortway, Brookville Bypass, Jefferson Co.;
Pa.—Jos. Ciccone & Sons, Inc., R.D. 3, Quakertown, Pa., LB **$482,458,** 16,982 ft. cr. agg. base with bit. surf. variable in width, and 2 bridges, L.R. 06118(2), Berks Co.;
Pa.—Chain-Link Fence Corp., 7800 S. Chicago Ave., Chicago 19, Ill., LB **$426,558,** 46.34 mi. furnishing, placing right-of-way fence, traffic signs and markers, L.R. 797(13) Interstate Traffic Rte. 90, Erie Throughway, Erie Co. CD 7/14/61.

▲ **McCloskey Co.,** 1620 West Thompson St., Phila., Pa., CA **$2,857,248,** river crossing super-structure for Theodore Roosevelt BRIDGE, WASH., D. C. D. C. Govt. Dpt. Hys., 499 Pennsylvania Ave. N.W., Wash., D. C. BA 7/26/61, CA 8/9/61. CD 7/28/61, under LB.

BUILDINGS—LB & CA

▲ **East Aurora Builders, Inc.,** East Aurora, N. Y., Owner Builds, **$4,200,000,** 140 HOMES, EAST AURORA, N. Y.

▲ **Mar-Mes Constr. Co., Inc.,** 271 North Ave., New Rochelle, N. Y., CA **$1,604,230,** general constr. converting Junior High School into CITY HALL, NEW ROCHELLE, N. Y. City, 515 Main St., New Rochelle, N. Y. BA 7/13. CD 7/18/61, under LB.

▲ **Wiliam C. Pahl Constr. Co.,** Syracuse-Kemper Bldg., Syracuse, N. Y., CA Est. **$2,400,000,** 6 story PARKING GARAGE, S. Warren St., SYRACUSE, N. Y. 325-45 South Warren Street, Inc., c/o Contractor. Gage & Martinson, 305 E. 63 St., New York, N. Y., archts.

▲ **Austin Co.,** 16112 Euclid St., Cleveland, O., CA **$1,500,000,** design and construct 160,000 sq. ft. DISTRIBUTION CENTER, WEBSTER, N. Y. Xerox Corp., Inc., 240 Madison Ave., New York, N. Y.

▲ **Carl Buhr, Inc.,** Grand Central Terminal, New York, N. Y., CA **$2,372,741,** est. $5,598,000, general contract ENGINEERING CENTER, University Heights campus, NEW BRUNSWICK, N. J. Rutgers University, Office of the Treasurer, Room 101, Queens Bldg., New Brunswick, N. J., Grand total $3,627,489. BA 8/1/61, CA 8/10/61. CD 8/3/61, under LB.
Nicholas Schwalje, Inc., 4 Leonard St., Metuchen, N. J., CA **$677,585,** heating, ventilating and air conditioning contract, ENGINEERING CENTER, (New Brunswick, N. J.);
Comet Electrical Contractors, Inc., Westfield, N. J., CA **$577,163,** electrical contract, ENGINEERING BLDG., (New Brunswick, N. J.).

▲ **B. J. Lucarelli, Inc.,** 1100 McCarter Hy., Newark, N. J., LB **$1,555,000,** (5 bidders), general contract DORMITORY BLDGS. C and D, Douglass College campus, NEW BRUNSWICK, N. J. Rutgers University, Office of the Treasurer, Room 101, Queens Bldg., New Brunswick, N. J. BA 8/10/61. CD 7/18/61.

▲ **William C. Ehret,** 1723 North Olden Ave. Extension, Trenton, N. J., CA **$1,626,833,** general construction 5 story OFFICE BLDG. for State Department Education, West State and Calhoun Sts., TRENTON, N. J. State Division Purchase & Property, Second Floor, State House, Trenton, N. J. BA 7/27/61, CA 8/14/61. CD 8/3/61, under LB;
Stephen J. Gross, Inc., 50 Newman Spring Rd., Red Bank, N. J., CA **$533,419,** heating, ventilating and air conditioning for State Department of Education OFFICE BLDG., West State and Calhoun Sts., (Trenton, N. J.).

▲ **West Milford Homes,** c/o Jas. E. Hanson Co., 210 Main St., Hackensack, N. J., Owner Builds, **$3,500,000,** 200 HOUSES, Union Valley Rd., WEST MILFORD, N. J. Harsen & Johns, 60 Westervelt Ave., Tenafly, N. J., archts.

▲† **Wark & Co.,** 1920 Sansom St., Phila. 3, Pa., CA **$2,389,000,** (3 bidders), ALTERATIONS for installation of MAIL-FLO MACHINERY, U. S. POST OFFICE, 30th and Market Sts., PHILA., PA. General Services Admin., Region 2, 250 Hudson St., New York 13, N. Y. CD 3/15/61, under LB.

▲† **Arthur Venneri Co.,** 1906 K St. N.W., Wash., D. C., LB **$2,253,000,** (15 bidders), Base Bid, SATELLITE SYS Bldg. No. 8, Goddard Space Flight Center, GREENBELT, MD. National Aeronautics & Space Admin., Goddard Space Flight Center, Greenbelt, Md. BA 8/16. CD 7/20/61.

▲ **Shull Constr. Co.,** Westview, Wilmington, Del., Owner Builds, **$9,000,000,** RESIDENTIAL DEVELOPMENT (225), NEWARK, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Fla., Miami**—BA 9/7—Bd. Comrs. Dade Co., Courthouse, and Dade Co. Port. Auth., Miami International Airport, 90,000 sq. ft. HANGAR, 150,000 sq. ft. OVERHAUL SHOP, SERVICE BLDG. Plans deposit $200. Eastern Airlines, 4502 N.W. 36th St., Miami, lessee. George H. Miehls, 345 Center Bldg., Detroit, Mich., and Albert Kahn Associated Engineers & Architects, Inc., New Center Bldg., Detroit, Mich., engrs. CD 4/4/61.

BUILDINGS—BA

▲ **Fla., Marathon**—BA 9/5—Frank A. Martin, 410 71st St., Miami Beach, 400 RESIDENCES, Plantation Key and Venetian Shores. $3,500,000. Charles H. Markel Assocs., 9703 S. Dixie Hy., Kendall, archts.

▲ **Fla., Tallahassee**—BA 9/7—Florida State Bd. Control, Florida State University Psych. Bldg., HEALTH and PHYSICAL EDUCATION BLDG., Proj. No 0825. $2,000,000. Forrest M. Kelley, Jr., 552 West College Ave., archt. Guy C. Fulton, Bldg. "E" University of Florida, Gainesville, ass't. archt.

▲ **N. C., Durham**—BA 9/7—Duke University, Admin. Bldg., 150,000 sq. ft. 208 unit married students HOUSING, $1,500,000. Plans deposit $38.50. J. N. Pease & Co., 2925 N. Independence Bldg., Charlotte, archts. CD 6/6/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Lee Const. Co.,** Box 3608, Charlotte, N. C., CA **$2,382,387,** Contract 32, WATER TREATMENT PLANT IMPRVS., WINSTON, SALEM, N. C. City, City Hall, Winston-Salem, N. C. BA 7/25/61. CD 8/2/61, under LB.

▲ **J. A. Jones Constr. Co.,** 209 W. 4th St., Charlotte, N. C., CA **$2,331,700,** bulk GRAIN ELEVATORS, etc., CHARLESTON, S. C. South Carolina Ports Authority, Customhouse Wharf, Charleston, S. C. BA 7/26/61. CD 7/31/61, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery, Zone 4, ROADS,
Road Builders, Inc., 718 Murfreesboro Rd., Nashville, Tenn., CA **$1,756,459,** base, bit. paving 9.963 mi. from St. Clair Springs NE to Whitney on Interstate Rte. 59, St. Clair Co. BA 7/21/61. CD 7/31/61, under LB.

▲† **Electronic & Missile Facilities,** 2 LaFayette St., New York, N. Y., LB **$3,996,129,** CENTRAL LABORATORY-OFFICE, HUNTSVILLE, ALA. National Aeronautics Space Admin., Marshall Space Flight Center, Huntsville, Ala. BA 8/8/61. CD 7/19/61.

▲† **Western Contg. Corp.,** 400 Benson Bldg., Sioux City, Iowa, CA **$2,129,774,** DREDGING CHANNEL Mississippi River, St. Bernard Parish, CIVENG-16-047-61-159, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. BA 6/1. CD 6/9/61, under LB.

▲ **E. H. Reeder Constr. Co.,** 2128 Hawes Ave., Dallas, Tex., LB **$1,530,226,** (9 bidders), Contr. CSD-10, SANITARY TRUNK SEWERS, BATON ROUGE, LA. City, Municipal Bldg., Baton Rouge, La.

BUILDINGS—LB & CA

▲ **Campbell & Barnes, Lorne Pacey,** 6032 Central Ave., Apollo Beach (Sta. Ruckin) Fla., Owner Builds,

$1,500,000, two 3 story, masonry 307 x 51 ft. APARTMENTS, APOLLO BEACH (STA. RUSKIN), FLA. CD 8/4/61.

▲ **Mid-South Constr., Inc.,** P.O. Box 427, Montgomery, Ala., CA **$1,595,000,** HOSPITAL, MONTGOMERY, ALA. Bd. Trustees, Montgomery Baptist Hospital, Stakley Hall, First Baptist Church, Montgomery, Ala. CD 8/4/61, under LB.

▲ **R. B. Ball Constr. Co., Inc.,** Box 2300, San Antonio, Tex., CA **$8,650,000,** Wm. J. Guste SENIOR HOMES, Melpomene, Clio, Simon, Bolivar and S. Robertson Sts., NEW ORLEANS, LA. City Housing Auth., 4040 Queen and Crescent Bldg., 344 Camp St., New Orleans, La. BA 7/11. CD 7/14/61, under LB.

▲ **Hargett Constr. Co.,** 998 New Circle Rd. N.E., Lexington, Ky., CA **$1,729,449,** 6 story LIBRARY ADDN., University of Kentucky, LEXINGTON, KY. Commonwealth Ky., Div. Purchases, Frankfort, Ky. BA 7/20. CD 7/25/61, under LB.

▲ **Trammel Constr. Co.,** Box 561, Bristol, Tenn., CA **$2,148,300,** (6 bidders), general contract SEMINARY, Alta Vista Ave., LOUISVILLE, KY. Louisville Presbyterian Theological Seminary, 109 E. Broadway, Louisville 2, Ky. BA 7/28, CA 8/10. CD 8/2/61, under LB;
Stevens Engineering Co., 721 S. 1 St., Louisville, Ky., CA **$546,778,** plumbing, heating and ventilating for SEMINARY, Alta Vista Ave., (Louisville, Ky.).

▲ **Kemmons Wilson Constr. Co., Inc., 3742 Lamar Ave.,** Memphis, Tenn., Owner Builds, **$1,700,000,** 165,000 sq. ft. APARTMENT, NASHVILLE, TENN.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—BA 8/29—Dpt. Purchases, City Hall, Zone 2, OUTFALL RAMP and TUNNEL CENTRAL DIST. FILTRATION PLANT, Proj. 80.391-61-3, $1,750,000. CD 5/3/61.

▲ **O., Cleveland**—BA 8/31—City, City Hall, Zone 14, CULVERTING Morgans Run. $1,500,000. Plans deposit $50. Jay R. Katz, city engr. CD 7/18/61.

▲ **O., Cleveland**—BA 9/7—Bd. Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Zone 13, PAVING Rockside Rd. from Brecksville Rd. to Turney Rd. $3,600,000. Plans deposit $50. CD 8/10/61.

HEAVY CONSTRUCTION—LB & CA

▲ **R. H. Fulton & Co.,** 2323 Erskine Rd., Lubbock, Tex., CA Est. **$1,500,000,** 27 mi. 30 in. LOOP LINES, Livingston and McLean Counties, Ill., 62 mi. 36 in. LOOP LINES, Meade, Clark, Ford and Republican Counties, Kansas, and Mahaska Co., Iowa, ILLINOIS, KANSAS and IOWA. Natural Gas Pipeline Co., 122 South Michigan Ave., Chicago, Ill.

BUILDINGS—LB & CA

▲ **R. P. Farnsworth & Co., Inc.,** P.O. Box 850, New Orleans 2, La., CA **$2,257,750,** 11 story low rental APARTMENT, 1 story SENIOR CITIZENS RECREATION BLDG., Ohio 1-6, COLUMBUS, O. Columbus Metropolitan Housing Auth., 425 W. Rich St., Columbus 22, O. BA 6/8/61. CD 5/15/61.

▲ **Glazer-Marotta Co.,** 20515 Shaker Blvd., Cleveland 22, O., Owner Builds, **$3,000,000,** eighteen APARTMENTS, near Northfield USA Project, Northfield Rd., NORTHFIELD, O. CD 11/9/60.

▲ **Huber, Hunt & Nichols, Inc.,** 2450 Stibbs Ave., Indianapolis, Ind., CA Est. **$2,500,000-$3,000,000,** POWER PLANT, South Fork Saline River near Marion, ILLINOIS. Southern Illinois Power Cooperative, P.O. Box 689, Marion, Ill. Burns & McDonnell Engineering Co., 4600 E. 63rd St. Trafficway and P.O. Box 173, Kansas City 41, Mo., engr. CD 8/1/61, under CA.

▲ **Crane Constr. Co.,** 201 E. Walton Place, Chicago, Ill., CA **$2,800,000,** 15 story, 400 room HOTEL, 300 car GARAGE, Michigan Ave. and Delaware Pl., CHICAGO, ILL. R. J. Scher & John J. Mack, 201 E. Walton Pl., Chicago, Ill. CD 1/5/60.

▲ **Mercury Builders,** 761 S. Harlem St., Forest Park, Ill., CA **$3,287,000,** TRANSIT BUS OVERHAUL BLDG., 77th and Vincennes Sts. CHICAGO, ILL. Chicago Transit Auth., Merchandise Mart Chicago, Ill. BA 7/17/61. CD 7/20/61, under LB.

▲ **Stolze Lumber Co.,** 20th and Adams Sts., Granite City, Ill., Owner Builds, **$2,000,000, $700,000** first year (3 or 4 year program), 266 RESIDENCES, SHOPPING CENTER Airwood Manor Subdivision, one mile east of EAST ALTON, ILL.

▲ **Badger Mfg. Co.,** 230 Brent St., Cambridge, Mass., CA Est. **$1,500,000,** design and construct SORBITOL PLANT, PEORIA, ILL. Baird Chemical Industries, Inc., 104 W. 33rd St., New York, N. Y.

▲ **C. D. Barnes Assocs., Inc.,** 3437 Eastern SE, Grand Rapids, Mich., CA **$1,530,000,** Catholic Central HIGH SCHOOL, Bristol Rd. and Richmond St., N.W., GRAND RAPIDS, MICH. Western Michigan Catholic Diocese, Chancery Office, Grand Rapids, Mich. Robinson Campau & Crowe, 738 Michigan Trust Bldg., Grand Rapids, Mich., archts.

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Arch./Engr.—Lockwood-Greene Engrs., Inc.
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21

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Oklahoma** — BA 9/19 — U. S. Eng., Box 61, Tulsa, Zone 2, RELOCATING U. S. Hy. 60 and M. K. T. Ry., grading Section 5, Bridges Section 4 and 5, Eufaula Reservoir, CIVENG-34-066-62-12, $3,000,000. Plans deposit $10. CD 8/11/61.

▲† **Oklahoma**—BA About 9/20—U. S. Eng., Box 61, Tulsa, Zone 2, RELOCATING 2.6 mi US Hy. 69 and M-K-T RAILROAD SUBGRADE, Section III, CIVENG-34-066-62-14, $1,500,000. Plans deposit $10. CD 9/30/60.

▲† **North Dakota**—BA About 10/12—U. S. Eng., Ballistic Missile Constr. Office, 5651 W. 96th St., Los Angeles, Calif., MINUTEMAN MISSILE COMPLEX., near Minot Air Force Base, ENG-04-548-62-6. Over $10,000,000. Ralph M. Parson Co., 617 W. 17th St., Los Angeles 17, Calif, engr.

BUILDINGS—BA

▲ **Minn., St. Paul**—BA 9/12—Bd. Educ. Special School Dist. No. 2, City Hall and Court House, 2 story Johnson HIGH SCHOOL, swimming pool, Arcade and East Hyacinth Sts. $3,300,000. Toltz, King, Duvall, Anderson & Assocs., Inc., 1408 Pioneer Bldg., archt. CD 12/1/59.

▲ **Colo., Denver**—BA 9/15—St. Joseph's Hospital, 1818 Humboldt, Denver, 280,000 sq. ft. HOSPITAL EXPANSION, $7,500,000. Monroe, Irwin & Dunham, 125 Wadsworth, archts. CD 9/11/59.

▲ **Colo., Denver**—BA 9/15—Western Farm Bureau Life Insurance Co., Mining Exchange Bldg., 9 story, 130 x 75 ft. OFFICE, 3 story, 175 x 123 ft. GARAGE, $2,200,000. Piel, Slater, Small & Spenst, 5650 E. Evans Ave., archts. Swanson-Rink & Assocs., 1640 Boulder, mech. engrs. Anderson & Koerwitz, 655 Broadway, struct. engrs. CD 2/1/61.

BUILDINGS—SLC

▲ **Mo., Kansas City**—Southwestern Bell Telephone Co., 324 E. 11, Kansas City, Mo., soon lets contract 8 story 123,672 sq. ft. masonry, steel frame, concrete block OFFICE ADDN. $4,000,000. Neville, Sharp & Simon, 25 E. 12 St., Kansas City, Mo., archts. CD 1/26/61.

▲ **Tex., Victoria**—Congregation of the Sisters of the Incarnate Word & Blessed Sacrament, 105 W. Church St., soon lets contract MOTHER HOUSE and NOVITIATE, $1,500,000. Di Stefano & Cerna, 6936 San Pedro Ave., San Antonio, archts.-engrs. Oscar W. Schuchart, 336 Fredricksburg Rd., and Feigenspan & Pinnell, 6936 San Pedro Ave., San Antonio, engrs. CD 2/23/61.

Darex Diary

by Mel Prior

Member, American Concrete Institute

Technical Service Manager, Construction Chemicals

GRACE — W. R. GRACE & CO./DEWEY AND ALMY CHEMICAL DIVISION

Cambridge 40, Mass. • Chicago 38, Ill. • San Leandro, Calif. • Montreal 32, Canada

(No. 23 of a series)

Trouble on Tap in Concrete Mixwater

MORE THAN ONCE, I've been asked to name the basic causes of concrete failure or distress. We all know that trouble can come from many sources, but the actual root of the evil is sometimes hard to pin down.

The one ingredient which probably stands out as the biggest troublemaker, because of misuse, is water. It has long been known that the water-cement ratio governs the strength and quality of concrete. However, do enough of us recognize that the nature of the water used can be a factor? Do we fully appreciate, also, that an excess of water above the amount required for the designed mix can bring disastrous results?

This country is using more and more detergents each year. Where do they go after use? Not uncommonly, they turn up in concrete mixing water. Unlike soaps, they are not filtered out during purification processes. Abnormally high air content in concrete with normal amounts of air entrainment specified will frequently result . . . without the mixwater being suspect because it came from a drinking tap. Investigate the water next time this happens to you.

Excessive use of mixing water is usually attributable to the men on the job. They tend to add water to any concrete mix indiscriminately in order that the concrete may be placed with minimum effort. If this reduces the strength, as we all know it will, then their answer is to add more cement.

Actually, at the present time, most concrete mixes are already overdesigned. More cement is being used than is required for a given strength because the designers are using old specifications based on 1,400 — 1,500 Wagner surface areas rather than on the present 1,800—2,000 Wagner surface areas of modern Type I cements. Not all, but a majority of specifiers are using outmoded references when setting up specs for concrete mixes. All specifications should be critically reviewed.

The ACI, PCA and ASTM are continually trying to bring to the attention of architects and engineers the changes that have taken place in cement in the past few decades. Portland cement is no different from any other "raw" material. It must be properly used—not abused, for maximum efficiency in modern concreting. The old "saw" that extra cement will cure all concrete ills does not hold up any more than the claim of some that a certain admixture is a panacea. We all know that there is no magic answer to the problem, but we can, at least recognize the pitfalls and take the indicated steps to avoid them.

For one thing, be sure of the water used on the job. Especially in metropolitan areas, detergents are definitely a factor to be considered. If necessary or advisable check with laboratory mixes using *distilled* water.

At the same time, consider the use of chemical admixtures such as WRDA water reducing agent or DARATARD retarding water reducer. These admixtures can help assure required plasticity, workability and strength with *minimum* content of both water and cement. We make no pretense that they are concrete cure-alls, but either one might very well be just what the doctor ordered for *your* next job.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI** — State Dpt. Hys., State Office Bldg., Jefferson City, ROADS,

Mo.—**Frank Trager Contr.**, 401 S. Washington, Chillicothe, Mo., CA **$908,336** grad., culvts., 24 ft. conc. pavt. 5.469 mi. Rte. 36 Sec. 58(2), Linn Co.;

Mo.—**Geo. Bennett Constr. Co., Inc.**, Muncie, Kan., CA **$2,064,067** grad., culvts. 2-24 ft. conc. pavt. 3.628 mi. F-FG-353(22), Jackson Co;

Mo.—**W. J. Menefee Constr. Co. & Koss Constr. Co.**, 510 Iowa-Des Moines Bank Bldg., Des Moines, Iowa, CA **$3,028,176** grad., culvts. 2-24 ft. conc. pavts. 10.344 mi. I-70-2(9)63, Saline Co.; CA **$2,097,473** grad., culvts. 1-24 ft conc. pavt. 12.882 mi. Sec 55(1), Lawrence Co.;

Mo.—**Midwest Precote Co.**, 7600 E.17 St., Kansas City, Mo., CA **$357,662** wid'n., resurf. 11.171 mi. Sec. 88 (3), Randolph Co.;

Mo.—**J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan., CA **$1,526,454**, gr., culvts. 2-24 ft. conc. pavt. 5.63 mi. Proj. I-70-3(44), Callaway Co. Grand total $9,982,168, BA 7/27, CA 7/30, CD 8/2/61 under LB.

▲ **ARKANSAS**—State Hy. Comn., Highway Bldg., Capitol Mall., Little Rock, ROADS,

Ark.—**T. L. James & Co., Inc.**, P.O. Box 531, Ruston, La. CA **$595,699**, Job 11650, 8.426 mi. constr. US hy. 54, Crittenden Co., CD 8/8/61, under LB;

Ark.—**Reynolds & Williams**, 3200 Brown St., Little Rock, Ark. CA **$1,148,031**, Job **4447**, 12.592 mi. constr. US Hy. 71 south of Fort Smith, Sebastian Co., CD 8/4/61, under LB;

Ark.—**E. E. Barber Constr. Co., Inc.**, 810 Wheeler Fort Smith, Ark. CA **$1,892,317**, Job 4462, 5.767 mi. constr. Interstate Hy. 40 near Oklahoma State Line, Crawford Co., BA 8/2/61. CD 8/4/61, under LB. Grand total $3,536,047.

▲ **KANSAS**—State Hy. Comn., State Office Bldg., Topeka, ROADS,

Stannard Constr. Co. & Stannard Constr. Co., Inc., 6015 North Broadway, Wichita 19, Kan., CA **$1,992,966**, (5 bidders), concrete pavement Alt. 2 12.543 mi. Proj. 70-99 I 70-5(39) 327, Wabaunsee Co. BA 8/8/61. CD 7/13/61.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opend Aug. 15, ROADS,

Tex.—**Collins Constr. Co. of Texas**, P.O. Box 1192, Austin, Tex., LB **$905,282**, grading, strs., fl. base and A.C. pvt., 7.231 mi., Hy ST 7 & 320, S 22(3) and S 2138(2), Falls Co., CD 8/1/61; LB **$164,154**, (5 bidders), rebuild grading, strs., base, surf., 3.701 mi., Hy FM 613, C 699-1-14, Taylor Co., CD 7/25/61; LB **$189,441**, (6 bidders), grading, strs., fl. base and asp. surf., 13.918 mi., Hy US 80, C 5-1 and 2-34 and 35, Midland & Ector Counties, CD 8/1/61.

Tex.—**Cecil Ruby Co., Inc.**, 907 Brown Bldg., Austin, Tex., LB **$1,645,401**, (8 bidders), grading, strs., base and A.C. pvt., 3.511 mi., Hy. IH 410, I 410-4(44), Bexar Co., CD 7/25/61.

▲ **City of Colorado Springs** City Hall, Colorado Springs, Colo., rejected bids July 18, WATER STORAGE RESERVOIR on Upper Blue River consisting rock filled dam 930 ft. long, 73 in. high, Brackenbridge COLORADO SPRINGS, COLO. LB $1,600,000. CD 7/24/61, under LB.

BUILDINGS—LB & CA

▲ **G. F. Cook Constr. Co.**, 2833 Lyndale Ave. S., Minneapolis, Minn., LB **$1,827,000**, (8 bidders), HOUSING for the ELDERLY, Site No. 11, MINNEAPOLIS, MINN. Minneapolis Housing & Redevelopment Auth., 215 Public Health Center Bldg., Minneapolis, Minn. BA 8/15. CD 7/12/61.

▲ **A. P. Nichols, Jr.**, Victor Bldg., 6 W. 10, Kansas City, Mo., Owner Builds, **$1,500,000**, 60000 sq. ft. Westport SHOPPING CENTER 470-car parking, KANSAS CITY, MO. Folger & Pearson, 1009 Baltimore, Kansas City, Mo., archts. CD 6/28/57.

▲ **Reynolds Metals Co.**, 4900 Oak, Kansas City, Mo., Owner Builds, **$6,000,000**, 600 unit HOUSE-APARTMENT, Attucks Urban Renewal Area, KANSAS CITY, MO. Geis-Hunter-Ramos, 1627 Main, Kansas City, Mo. archts.

▲ **Fluor Corp.**, 1500 South Atlantic Ave., Los Angeles, Calif., CA Total Est. **$20,000,000**, HELIUM EXTRACTION PLANT, BUSHTON, KAN. Helex Co. sub. Northern Natural Gas Co., 223 Dodge St., Omaha, Neb.;
Air Products, Inc., Trexlertown, Pa., CA EQUIPMENT for helium extraction plant, (Bushton, Kan.)

▲ **Ted C. Peters**, 804 E. Berry, Fort Worth, Tex., Owner Builds, **$10,000,000**, $3,000,000 1st year (three years to complete), 660 brick veneer RESIDENCES, White Lake Hills Addn., FORT WORTH, TEX. Hobart Bartlett, P.O. Box 11103, Fort Worth, Tex., engr.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., San Diego**—BA 9/8—City, Rm. 161, Civic Center Bldg., Zone 1, BULK HANDLING FACILITY, 10th Ave. Marine Terminal. $2,153,000. Plans deposit $25. Extended date. CD 7/27/61.

BUILDINGS—BA

▲ **Calif., Sacramento**—BA 9/12—State Div. Architecture, 1120 N. St., Sacramento, STRUCTURAL STEEL

and STEEL DECKING for 15 story State Office Retirement Bldg., W.O. 4556GC-26. $2,200,000. CD 12/5/58.

▲ **Calif., Los Angeles**—BA 11/28—Bd. Supervs. Los Angeles Co., 500 W. Temple St., MEMORIAL PAVILLION and UNDERGROUND GARAGE, Forum and Central Theatre, Civic Center. CD 3/17/61.

HEAVY CONSTRUCTION—LB & CA

▲† **Morrison-Knudsen, Inc.,** 319 Broadway, Boise, Idaho, CA **$4,221,337,** Colorado River Storage Proj., Glen Canyon Ship Rock 230 kv. TRANSMISSION LINES, DC 5610, ARIZONA and NEW MEXICO. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. BA 7/18/61, CA 8/7/61. CD 7/21/61, under LB.;
Broadway Maintenance Corp., 2643 Pennsylvania Ave., Pittsburgh, Pa., CA **$566,520,** Colorado River Storage Proj., Glen Canyon Ship Rock TRANSMISSION LINES, DC-5610, (Arizona-New Mexico).

▲ **CALIFORNIA**—State Div Hys., 120 South Spring St., Los Angeles, ROAD,
Peter Kiewit Sons' Co., 345 Kieways Ave., Arcadia, Calif., CA **$2,229,706,** roadway embankment, 2 bridges, connecting roads 6 lane freeway US Hy. 101 near Del Mar and Carlsbad, San Diego Co. BA 7/13, CA 8/10. CD 7/18/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 South Spring St., Los Angeles, ROAD,
B. J. Ukropina, T. P. Polich, Steve Kral & John R. Ukropina, P.O. Box 105, San Gabriel, Calif., CA **$4,482,585,** grading, paving to constr. 2.4 mi. 6 and 8 lane freeway, Golden State Freeway between 0.1 mi. west of Lankershim Blvd. and Osborne St., Los Angeles Co. BA 7/27, CA 8/10. CD 8/1/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1220 N St., Sacramento, ROAD,
E. C. Young, 3256 F St., San Diego, Calif., CA **$2,522,813,** grading, surf. 2.6 mi. 4 lane freeway Clarence Ward Memorial Freeway (State Hy. Rte. 236), from Goleta Campus of University of California to U.S. Hy. 101, Santa Barbara Co. BA 8/2. CD 8/4/61, under LB.

▲ **Healy Tibbits Constr. Co.,** 411 Brannan St., San Francisco, Calif., CA Est. **$2,000,000,** 2 mi. long SUBMARINE PIPE LINE, incl. 323,000 barrel STORAGE TANK and 1,400 h.p. BOOSTER PUMP STATION at El Segundo Refinery, EL SEGUNDO, CALIF. Standard Oil of California, Western Operations, Inc., 30 Rockefeller Plaza, New York 20, N. Y. CD 8/18/52, under Industrial Buildings.

▲ **Schuemann & Johnson,** 700 N. 36 St., Seattle, Wash., CA **$3,377,399,** Proj. 3277-3, 69,550 ft. 42 and 51 in. Mad River WATER SUPPLY PIPE LINE, EUREKA, CALIF. Humboldt Bay Municipal Water Dist., 125 5 St., Eureka, Calif. Bechtel Corp. 220 Bush St., San Francisco, Calif., engrs.-constructors. CA 8/3. CD 10/1/56.

▲ **A. Teichert & Son, Inc.,** 1931 Stockton Blvd., Sacramento, Calif., LB **$2,078,422,** (6 bidders), DRAINAGE, CHANNELS, CONCRETE PIPING, CULVERTS, Manlove Drainage Assessment Dist. north of here, SACRAMENTO, CALIF. Bd. Supervs. Sacramento Co., 827 7 St., Sacramento, Calif. BA 8/9.

BUILDINGS—LB & CA

▲ **Idaho Retirement Home Foundation, Inc.,** 1106 State St., Boise, Idaho, Owner Builds, **$2,000,000,** 126 unit RESIDENTIAL RETIREMENT APARTMENT, BOISE, IDAHO. CD 6/29/61.

▲ **Rothschild, Raffin & Weirick,** 875 Sansome St., San Francisco, Calif., LB **$3,004,000** (8 bidders), BIOLOGICAL SCIENCES, UNIT 2, University of California Davis Campus, DAVIS, CALIF. Office of Architects and Engineers, University of California, Davis, Calif. BA 8/10. CD 5/13/60.

▲ **Kemp Bros. & George K. Thompson,** 8750 Mettler St., Los Angeles, Calif., LB **$3,338,932,** (6 bidders), 6 story SCIENCE and CLASSROOM, Orange County State College, W.O. 4414GC-20, FULLERTON, CALIF. State Div. Architecture, 107 South Broadway, Los Angeles, Calif. BA 8/16. CD 7/10/61.

▲ **Engstrum & Nourse,** 923 Folsom St., San Francisco, Calif., LB **$2,616,800,** (5 bidders) 3 story SCIENCE BLDG., Alameda County State College. W.O. 4554GC-59, HAYWARD, CALIF. State Div. Architecture, 1120 N St., Sacramento, Calif. BA 8/15. CD 7/10/61.

▲ **Rothschild, Raffin & Weirich,** 875 Sansome St., San Francisco, Calif., LB **$1,521,000,** (8 bidders), general contr. FINE ARTS BLDG., Alameda County State College, W.O. 4554GC-28, HAYWARD, CALIF. State Div. Architecture, 1120 N St., Sacramento, Calif. BA 8/8. CD 7/10/61.

▲ **Morley Constr. Co.,** 7700 Sunset Blvd., Los Angeles, Calif., LB **$4,179,000,** est. $4,000,000 (7 bidders), CHEMISTRY GEOLOGY BLDG. ADDN., Step 1, University of California, LOS ANGELES, CALIF. University California, at Los Angeles, 405 Hilgard Ave., Los Angeles, Calif. BA 8/8. CD 7/21/61.

▲ **Lakewood Land Co.,** 10835 Santa Monica Blvd., Los Angeles, Calif., CA **$1,694,700,** 115 DWELLINGS, Tract 24665, MONTEREY PARK, CALIF. Central Land Co., 10835 Santa Monica Blvd., Los Angeles, Calif. David Freedman, 113 N. San Vicente Blvd., Los Angeles, Calif., archt.

▲ **Twaits-Wittenberg Co.,** 507 Bixel St., Los Angeles, Calif., CA **$2,400,000,** 300x406 ft. FACTORY, 2100 Compton Blvd., REDONDO BEACH, CALIF. Space Technology Laboratories, Inc., 5500 El Segundo Blvd., El Segundo, Calif. Albert C. Martin & Assoc., 333 S. Beaudry St., Los Angeles, Calif., archts.

▲ **Cahill Constr. Co., Inc.,** 1080 Chestnut St., San Francisco, Calif., CA Est. **$4,000,000,** 10 story APARTMENT, 1818 Broadway, SAN FRANCISCO, CALIF. Transcal Properties, Inc., subsidiary of Transcontinental Properties, Inc., 4 W. 58 St., New York 19, N. Y. Hertzka & Knowles, 32 Fremont St., San Francisco, Calif., archts.

▲ **John B. Kilrop (Coordinated Constr. Co.),** 12901 Crenshaw Blvd., Hawthorne, Calif., Owner Builds, **$1,500,000,** 1 story, 151,000 sq. ft., tilt-up concrete, Membership DEPARTMENT STORE, Lawrence Station Rd., SUNNYVALE, CALIF. Facility Engineering Ltd., 1052 W. 6 St., Los Angeles, Calif., engrs. Consumers Mart of America, lessee.

▲ **Cunningham Developers,** 10950 Dace St., Stanton, Calif., Owner Builds, **$2,093,920,** 176 stucco DWELLINGS, Tract 4063, WESTMINSTER, CALIF.

CANADA

BUILDINGS—BA

▲ **Que., Montreal**—BA 8/29—Peelbrooke Development Corp., c/o Senior Holdings Ltd., 1420 Sherbrooke St. W., 38 story circular HOTEL, Peel and Sherbrooke Sts. $20,000,000. Extended date. Pater Dickinson, 1374 Sherbrooke St. W., archt. Letendre, Monti & Assocs., 3810 Laval St., engrs. Sheraton Hotels (Sheraton Cartier), lessee. CD 7/28/61.

▲ **Ont., Toronto**—BA 8/30—Hospital for Sick Children, 555 University Ave., first phase, 11 story, two bsmnts., steel framing, masonry, brick, air-conditioned HOSPITAL EXPANSION, 3 floors CENTER WING ADDN. $3,500,000. Extended date. Govan, Ferguson, Kindsay, Kaminker, Langley & Keenleyside, 10 Price St., archts. C. D. Carruthers & Wallace Consultants Ltd., 92 Yorkville Ave., engrs. CD 8/1/61.

▲ **Ont., Orillia**—BA 9/6—Dpt. P. Wks., Rm. 6630, East Block Parliament Bldgs., Toronto, RETARDED CHILDREN PAVILION, LAUNDRY BLDG., TRADES BLDG., CONNECTING TUNNELS, Ontario Hospital, $3,000,000. Plans deposit $750.

BUILDINGS—SLC

▲ **Sask., Regina**—Saskatchewan Power Corp., 1739 Cornwall St., soon lets contract second phase, 13 story, brick, steel HEAD OFFICE, Victoria St., Total est. $6,000,000. Joseph Pettich, 908 McCallum Hill Bldg., Regina, archt. CD 7/18/61.

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SAGINAW, MICHIGAN

HEAVY CONSTRUCTION—LB & CA

▲ **Burns & Dutton Concrete & Constr. Co., Ltd.,** P.O. Box 636, Edmonton, Alta., LB **$8,207,531,** 160 x 900 ft. AIR TERMINAL with 3 story central block, parking and approaches above multi-story office block, Edmonton International Airport, EDMONTON, ALTA. Dpt. Transport, Hunter Bldg., Ottawa, Ont. BA 8/10/61. CD 7/31/61.

▲ **C. A. Pitts General Contractor Ltd.,** 30 Commercial Rd., Toronto, Ont., CA **$4,433,192,** rein.-con., structural steel elevated STRUCTURE from Rees St. to York St., F. G. Gardiner Expressway, (R-18-61) TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. W, Toronto, Ont. BA 7/25/61. CD 8/1/61, under LB.

▲ **QUEBEC**—Provincial P. Wks. Dpt., Parliament Bldgs., Quebec City, Bids opened 7/20, BRIDGE,
Dominion Bridge Co., Ltd., Lachine, Que., LB **$2,299,-180.** (2 bidders), steel superstructure, new span at Honore Mercier Bridge over St. Lawrence River between LaSalle and Caughnawaga, Montreal. BA 7/20/61. CD 6/19/61.

▲ **Dynamic Industries, Inc.,** 45 Dorchester St. S, Quebec City, Que., LB **$1,881,867,** GALVANIZED STEEL TOWERS for 230 kv line, Chaudiere, QUEBEC, Quebec Hydro Electric Comn., 107 Craig St. W, Montreal, Que.

BUILDINGS—LB & CA

▲ **Lundrigan & Lundrigan Constr. Co., Ltd.,** Riverside Dr., Corner Brook, Newfoundland, CA Est. **$5,000,-000,** 3 story HOSPITAL, Trans-Canada Hy., near Newfoundland Airport Club, GANDER, NEWFOUNDLAND, Newfoundland Dpt. Health, Parliament Bldg., St. John's, Newfoundland, Dpt. Health & Welfare, Jackson Bldg., Ottawa, Ont. and Dpt. Transport Hunter Bldg., Ottawa, Ont. Belanger & Roy Architects, 232 St. George St., Moncton, N. B., archts. CD 3/17/61.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

▲ **Ethiopia**—BA 9/25—Minister P. Wks. & Communications, Imperial Govt., Ethiopia and Ethiopian Airlines, Addis Ababa, TERMINAL BLDGS. at four airports. Ammann & Whitney-Husted, 111 8 Ave., New York 11, N. Y., U.S.A., archts.-engrs.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Argentina, Buenos Aires** — BA 9/6 — Minist. Obras Publicas Prov. Buenos Aires, Direcc. Pavimentacion, LaPlata. rein.-con. PAVING 567 city locks (100 mts. ea.) in Almirante Brown, Berissc, Ensenada, Fl. Varela. Quilmes, Berazategui, LaPlata. $5,575,000.

HEAVY CONSTRUCTION—LB & CA

▲ **ARGENTINA**—Direcc. Nacional Vialidad, Av. Maipu 3 Buenos Aires, Bids opened 81, ROAD,
Novobra Empresa Constructora SRL, Av. Corrientes 2025, Buenos Aires, Argentina, LB **$2,216,000,** est. $2,367,000, 35 klms. basic works, rein.-con. paving and rein.-con. bridge Rte. 177, Section Santa Teresa, Santa Fe Prov.

BUILDINGS—LB & CA

▲ **Fish International Corp.,** (Fish Engineering Corp.), M & M Bldg., Houston, Tex., CA Est. **$7,500,000,** PETROCHEMICAL PLANT, RIO TERCERO, ARGENTINA. Hooker Chemical Corp., 666 5 Ave., New York, N. Y., U.S.A., Atanor, Compania Nacional para la Industria Quimica, S.A.M., Buenos Aires, Argentina.

FOREIGN

BUILDINGS—BA

▲ **Australia**—BA 9/25—Electricity Comn. of New South Wales, Box 5257, G.P.O., Sydney, First Stage, POWER STATION incl. clearing, temp. access road, main roads, offices and stores, etc, Lake Munmorah. Plans deposit $225.

HEAVY CONSTRUCTION—LB & CA

▲ **A. T. E. Aliakmon,** 11 Kolokotrani St., Athens, Greece, CA **$2,200,000,** DEVIATION DAM and related work, Alpheios River, GREECE. Greece Public Power Corp., Athens, Greece.

For additional reports see CONSTRUCTION DAILY REPORTS SECTION

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **N. J., Trenton**—Ewing-Lawrence Sewerage Auth., 600 Whitehead Rd., SEWER LINES EXTENSION, Ewing Twp., **$3,300,000;** SEWAGE TREATMENT PLANT ADDN. Whitehead Rd., Lawrence Twp., **$1,323,000;** SEWER LINES EXTENSION to serve new Rider College Campus, Lawrence Twp., **$900,000.** Buck, Seifert & Jost, 112 E. 19th St., New York, N. Y., consult. engrs. CD 4/4/61.

▲ **Utah, Salt Lake City**—Salt Lake Municipal Corp., City and County Bldg., Zone 11, bond election Sept. 12, SEWAGE DISPOSAL PLANT, **$7,000,000,** CD 12/13/56; SEWER TRUNK LINE, **$2,500,000,** CD 2/26/60; STORM SEWERS, **$2,500,000.** CD 8/30/54.

BRIDGES

▲ **CONNECTICUT**—State Hy. Dpt., P.O. Box 2188, Hartford, Zone 14, BRIDGE,
Hartford—bridge to carry East-West Hy. across N. Y., N. H. & H. R. R. approx. 1,200 ft. east of Sigourney St. railroad crossing. **$5,000,000.**
bridge to carry Sigourney St. over N. Y., N. H. & H. R. R. tracks. $450,000.

▲ **COLORADO**—State Hy. Dpt., 4201 East Arkansas Ave., Denver, ROADS,
Clear Creek Co.—2 mi. Eastern approach from Empire to Straight Creek Tunnel, Continental Divide Tunnel, **$1,000,000.** Meurer & Knoerle, 1815 Federal Bldg., Denver, consult. engr.
Summit Co.—2 lane, 9,000 lin. ft. Continental Divide Straight Creek Tunnel, **$20,000,000-$24,000,000.** International Engineering Co., 74 New Montg. St., San Francisco, Calif., consult. engr. CD 3/3/59.
Western approach from Dillon to Straight Creek Tunnel 9 mi. Continental Divide Tunnel, **$6,000,000.** Donald C. Sutherland, Inc., 1380 South Santa Fe, Denver, Colo., consult. engr.

▲ **O., Cleveland** — Bd. Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Zone 13, EXTENDING Rockside Rd. from Brecksville Rd. to Turney Rd. **$3,900,000.** Alden E. Stilson & Assocs., 245 N. High St., Columbus, consult. engrs. Albert S. Porter, co. engr. Bids soon. CD 11/13/59.

EARTHWORK, WATERWAYS

▲ **La., New Orleans**—Orleans Levee Bd., New Court House, RECLAMATION 1,451 acres from Lake Pontchartrain between New Orleans Airport and Little Woods, constr. 5.5 mi. SEAWALL, developments parks and playgrounds. First Phase, DEVELOPMENT between Airport and Citrus Canal, built up by hydraulic fill. **$3,000,000.** Bids 1962.

UNCLASSIFIED

▲† **Iowa, Des Moines**—General Services Admin., 19th and F Sts., N.W., Wash., D. C., FEDERAL OFFICE. **$10,335,000** (no appropriation).

▲† **Va., Williamsburg**—Dist. P. Wks. Office, Fifth Naval Dist., Norfolk, Zone 11, plans by Clark, Buhr & Nexsen, Midtown Bldg., Norfolk, six 1 and 2 story, approx. 160,000 sq. ft. bldgs., EXPERIMENTAL TRAINING FACILITY, Camp Peary, near here. **$3,000,000.** Fraioli-Blum-Yesselman, 1214 Granby St., Norfolk, consult. engrs.

PUBLIC BUILDINGS

▲ **Ala., Mobile**—Mobile Housing Auth., 155 Eagle Dr., plans by T. Cooper Van Antwerp, 354 St. Francis St., 440 units Josephine Allen low rent HOUSING PROJECT, **$6,000,000.** J. B. Converse & Co., 508 Dauphin St., consult. engrs. CD 5/6/60.

▲ **Calif., Simi**—Simi Valley Unified School Dist., voted $13,403,000 bonds June 6, 7 ELEMENTARY SCHOOLS, **$6,083,000;** 2 JUNIOR HIGH SCHOOLS, **$3,520,000;** 1 SENIOR HIGH SCHOOL, **$3,800,000.** CD 3/21/61.

▲† **D. C., Wash.**—General Services Admin., 19th and F Sts. N.W., AGRICULTURE SOUTH BLDG., REPAIR and IMPROVEMENT. **$3,538,000** (no appropriation).

▲† **D. C., Wash.**—General Services Admin., 19th and F Sts. N.W., TREASURY BLDG. REPAIR and IMPROVEMENT. **$2,386,000** (no appropriation).

▲† **Fla., Jacksonville**—General Services Admin., 19th and F Sts., N.W., Wash., D. C. FEDERAL OFFICE BLDG. **$9,573,000** (no appropriation).

▲† **Fla., St. Petersburg**—General Services Admin., 19th and F Sts., N.W., Wash., D. C., FEDERAL OFFICE BLDG. **$5,325,000** (no appropriation).

▲† **Ga., Macon**—General Services Admin., 19th and F Sts., N.W., Wash., D. C., POST OFFICE and FEDERAL OFFICE. **$4,334,000** (no appropriation).

▲† **Ill., Chicago**—General Services Admin., 19th and F Sts. N.W., Wash., D. C., MAIN POST OFFICE REPAIR, IMPRVT. **$3,890,000** (no appropriation).

▲ **Ill., East St. Louis**—East St. Louis School Dist. 189, Bd. Educ., 240 N. 6th St., defeated **$8,154,000** bonds July 29, SCHOOLS and SCHOOL ADDNS. CD 7/10/61.

▲† **Ky. Louisville**—General Services Admin., 19th and F Sts. N.W., Wash., D. C., FEDERAL OFFICE. **$13,100,000** (no appropriation).

▲† **La., New Orleans**—General Services Admin., 19th and F Sts. N. W., Wash., D. C., POST OFFICE and COURTHOUSE CONVERSION, REMODELING. **$3,872,-000** (no appropriation). CD 6/23/61.

▲ **Md., Baltimore**—Maryland University, Lombard and Greene Sts., plans by James R. Edmunds, 1025 St. Paul St., Baltimore, Md., AMBULATORY BLDG. **$6,000,000,** (no construction funds); plans by Harder & Dressel, Glen Burnie, Md., LAW BLDG., **$1,900,-000** (no construction funds).

▲† **Md., Bethesda**—General Services Admin., 19 and F Sts. N. W., Wash., D. C., NATIONAL INSTITUTES of HEALTH REPAIR and IMPRVT. **$2,328,000** (no appropriation)

Mont., Great Falls—School Dist. 1, Great Falls, plans by Page & Werner, Thisted Center, HIGH SCHOOL, **$2,560,694.** Wenzel & Co., 4029 10th Ave. S., Great Falls, consult. engrs. CD 7/28/61.

▲† **N. H., Concord**—General Services Admin., 19th and F Sts. N. W., Wash, D. C., POST OFFICE and COURTHOUSE, **$4,036,000** (no appropriation)

▲† **N. J., Paterson**—General Services Admin., 250 Hudson St., New York 13, N. Y., plans by Arthur Rigolo, Grove and Rte. 46, Clifton, POST OFFICE ADDN., incl. air-conditioning. **$2,160,000.**

▲ **N. Y., New York**—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Praeger-Kavanagh-Waterbury, 126 E. 38 St., Zone 16, Proj. PW-176, 35 story ARCHIVES and RECORDS OFFICE, underground garage, Pearl and Madison Sts., Park Row. **$21,500,000.** Rouse, Dubin & Ventura, 554 W. 42 St., archts.-engrs. Plans filed. CD 6/8/59.

▲† **N. C., Fayetteville**—General Services Admin., 19th and F Sts. N. W., Wash., D C., POST OFFICE and COURTHOUSE, **$2,690,000.** (no appropriation).

▲† **Pa., Phila**—General Services Admin., 19th and F Sts. N. W., Wash., D. C., FEDERAL BLDG. REPAIRS and IMPRVTS, 5000 Wissahicken Ave. Bldg., **$5,-296,000** (no appropriation) CD 3/18/60.

▲† **Tex. Fort Worth**—General Services Admin., 19th and F Sts. N. W. Wash., D. C., FEDERAL OFFICE, **$20,-600,000** (no appropriation).

▲ **Utah, Salt Lake City**—Salt Lake Municipal Corp., City and County Bldg., Zone 11, bond election Sept. 12, CITY-COUNTY BLDG. **$5,000,000.** CD 10/6/60.

▲ **Utah, Salt Lake City**—Salt Lake Municipal Corp., City and County Bldg., Zone 11, bond election Sept. 12, CITY LIBRARY. **$2,500,000.** CD 6/23/61.

▲† **Va., Arlington**—General Services Admin., 19th and F Sts. N. W., Wash., D. C., PENTAGON REPAIR and IMPRVT. **$6,915,000,** (no appropriation). CD 3/1/60.

▲† **Va., Charlottesville**—General Services Admin., 19th and F Sts. N. W., Wash., D. C. HEALTH, EDUCATION and WELFARE BLDG. EXTENSION, REMODELING. **$2,333,000** (no. appropriation).

▲**Ont., Toronto**—University of Toronto, Simcoe Hall, plans by Shore & Moffat, 51 Wellington St. W., 14 story PHYSICS BLDG., two 2 and 3 story lower wings, Huron and Russell Sts. **$4,500,000.** CD 1/6/60.

COMMERCIAL BUILDINGS

▲ **Calif., El Cerrito**—Apato, Inc., c/o Paul Markling & Assoc., archts., 132 Brentwood Dr., South San Francisco, APARTMENT, HEALTH CLUB and RESTAURANT, parking, Olympic sized swimming pool. **$2,500,000.**

▲ **Calif., Santa Clara**—Kaiser Foundation, Kaiser Center, 300 Lakeside Dr., Oakland, Zone 12, plans by Kaiser Engineers, Div. H. J. Kaiser Co., 300 Lakeside Dr., Oakland, Zone 12, 7 story HOSPITAL, Kiely Blvd. and Homestead Rd. **$5,295,000.** Bids in 1962.

▲ **Conn., Bridgeport**—Hyman & Irving Shapiro, 20 E. 46 St., New York 17, N. Y., plans by Herbert & Clarence Lilien, 1841 Broadway, New York 23, N. Y., 11 story 250 units APARTMENT, east side Park Ave., north of Benson St. **$3,000,000.** Batlin & Oxman, 230 W 41 St., New York 36, N. Y. mech. engr. Greenhut & Taffel, 114 E. 32 St., New York 16, N. Y., struct. engrs. CD 6/20/61.

▲ **Ky., Louisville—Ursuline College,** 3105 Lexington Rd., Zone 6, plans by Wagner & Potts, 419 Fincastle Bldg., 3 and Broadway, Zone 2, **(A)** HIGH SCHOOL **(B)** MODEL SCHOOL ADDN. **(C)** STUDENT ACTIVITY BLDG. **(D)** DORMITORY **(E)** CLASSROOMS **(F)** LIBRARY. **$3,000,000.**

▲ **Miss., Biloxi**—Seashore Campground Retirement Home, Inc., plans by Vinson B. Smith Jr., 126 W. 4, Long Beach, Miss., RETIREMENT HOMES. Total cost **$5,250,000.** First Phase incls. five-5 story 700 unit APARTMENTS, **$1,250,000.** George B. Lambert Jr., Kremer Bldg., Gulfport, Miss., consult. engrs. Bids Oct. 1961.

▲ **N. J., Hackensack**—Hackensack Office Facilities, Inc., c/o John R. Kelly, 25 East Clinton Ave., Tenafly, 6 story OFFICE with parking garage between Moore and River Sts. **$6,000,000.**

▲ **N. Y., Cheektowaga**—Buffalo Motel Corp., 3736 Lamar Ave., Memphis 18, Tenn., 300-room Holiday INN, incl. swimming pool near Thruway Exit 43. **$2,000,000-$3,000,000.**

▲ **N. Y., New York**—Irving & Hyman Shapiro, 20 E. 46 St., Zone 17, plans by Herbert & Clarence Lilien, 1841 Broadway, Zone 23, 16 story APARTMENT, southside 58 St. between 8 and 9 Aves. Over **$2,-000,000.** Batlin & Oxman, 230 W. 41 St., Zone 36, mech. engrs. Greenhut & Taffel, 114 E. 32 St., Zone 16, struct. engrs.

▲ **N. Y., New York**—Shapco Builders, Inc., 20 E. 46 St., Zone 17, plans by Herbert & Clarence Lilien, 841 Broadway, Zone 23, 18 story APARTMENT, 623-35 Hudson St. **$2,943,000.** Batlin & Oxman, 230 W. 41 St., Zone 36, mech. engrs. Greenhut & Taffel, 114 E. 32 St., Zone 16, struct. engrs. CD 6/9/61.

▲ **N. Y., New York**—United Investors Corp., 60 E. 42 St., plans by Slingerland & Booss, 324 Madison Ave., New York, N. Y., and Kavy & Kavovitt, Inc., 44 Court St., Brooklyn, N. Y., 21 story APARTMENT, east side 2nd Ave., E. 87 St. **$20,000,000.**

▲ **O., Sharonville—Carrousel Motel, Inc.,** 8001 Reading Rd., Cincinnati, plans by Pansiera & Dohme, 3157 Woodford Rd., Cincinnati, 200 room MOTEL; CONVENTION HALL, 550 unit MOTEL, SWIMMING POOLS. **$10,000,000.** Oboler & Clarke, Arthur Godfrey Rd., Miami Beach, Fla., consult. engrs. Robert Harpenau, c/o owner, engr. BA first section late fall, 1961. CD 1/26/61.

▲ **Pa., Harrisburg**—Allen Constr. Co., Rte. 15, State Hill Rd., Camp Hill, plans by Herbert & Clarence Lilien, 1841 Broadway, New York 23, N. Y., 15 story APARTMENT, OFFICE, HOTEL, GARAGE, N.E.C., Front and Market Sts. **$5,000,000.** Batlin & Oxman, 230 W. 41st. St., New York 36, N. Y., mech. engrs. Greenhut, & Taffel, 114 E. 32nd St., New York 16, N. Y., structural engrs. CD 9/7/60.

▲ **Pa., Springfield**—Strawbridge & Clothier, 8th and Markets Sts., Phila., plans by Alexander Ewing & Assocs., Broad and Chestnut Sts., Phila., DEPARTMENT STORE. **$4,000,000.** Bids Fall 1961.

▲ **Tex., Dallas**—Southern Methodist University, 2nd Floor Admin. Bldg., EDUCATIONAL RESEARCH CENTER, Graduate Research Center of the Southwest, **$20,000,000.**

▲ **Tex., Kingsville**—Nickabob, Inc., M. L. Liles, Developers, Leander, 85 DWELLINGS, SWIMMING POOL, DOCKS, RM 1431 near Kingsville to Granite Shoals Lake. **$5,600,000.** The Marvin Turner Engineers, 3423 Guadalupe St., Austin, proj. engrs.

▲ **Wash., Seattle**—Washington Congregational Christian Conference, 720 14th Ave. N., plans by Durham, Anderson & Freed, 1100 Denny Way, 4 story HORIZON HOUSE ADDN., incl. dining room, chapel and infirmary. **$4,000,000.** BA 1/63.

▲ **Ont., Toronto**—Edward Silverberg, Sid Silver, 5785 Yonge St., Willowdale, MOTOR HOTEL, CURLING RINK, BOWLING ALLEY, SWIMMING POOL, GOLF COURSE, Finch Ave. and Don Valley Parkway. **$7,000,000** (2 year program).

▲ **Que., Bondville**—Domaine Brome, Inc., c/o Desourdy Constr. Ltee, Cowansville, plans by E. Adrien Barthiame, C.P. 322, Beloeil, 300 unit HOUSING, Domaine Brome, near here. **$3,000,000.**

INDUSTRIAL BUILDINGS

▲ **N. J., Perth Amboy**—California Chemical Co. Oronite Div. sub. Standard Oil Co. of California, 225 Bush St., San Francisco, Calif., 30 million pounds per year capacity PHTHALIC ANHYDRIDGE PLANT.

▲ **N. M., Jal**—El Paso Natural Gas Co., El Paso Natural Gas Co. Bldg., El Paso, Tex., ethane, propane, butane, gas processing PLANT. **$3,500,000.**

▲ **Pa., Aliquippa**—Jones & Laughlin Steel Corp., 3 Cateway Center, Pittsburgh, MODERNIZING STEEL MILL. **$8,000,000.**

▲ **Tex., Houston**—Goodpasture Grain & Milling Co., Inc., Grady Goodpasture, Brownfield, 6 million bu. GRAIN TERMINAL, 70 acres on Ship Channel near Galena Park, **$4,000,000;** moving steel petroleum storage tanks and converting into 4 mi. bu. capacity GRAIN STORAGE, 70 acres on Ship Channel, near Galena Park, **$2,000,000;** DOCKS, 70 acres on Ship Channel, near Galena Park, **$1,500,000;** CHEMICAL STORAGE, 70 acre tract Ship Channel, area Galena Park, **$1,500,000;** RAILWAY TRACKS, ROADS, 70 acre tract Ship Channel, area Galena Park, **$225,000.**

▲ **Tex., Houston**—Gulf Oil Corp., Gulf Bldg., Phase 3, annual capacity 400 million lbs. ethylene CHEMICAL PLANT, Mont Belvieu, **$14,000,000;** PROPYLENE PLANT, Mont Belvieu, **$4,000,000;** Phase 1, LABORATORY and STORAGE, Mont Belvieu, **$175,000;** Phase 2, WATER TREATMENT, Mont Belvieu, **$100,000,** Phase 4, MAINTENANCE SHOP, **$200,000.**

▲ **Tex., Orange**—NGL Corp., Orange, PROCESSING PLANT, on Sabine River south of here, **$9,250,000.**

▲ **Que., Tracy**—Shawinigan Water & Power Co., 600 Dorchester Rd., Montreal, Zone 2, 300,000 kw THERMAL ELECTRIC STATION, near here, **$45,000,000.**

▲ **Que., Varennes**—Shawinigan Chemicals Ltd., Sub. Shawinian Water & Power Co., 600 Dorchester St. W., Montreal, PETROCHEMICAL PLANT, to provide raw materials for products. **$20,000,000.** Shawinigan Engineering Co., Ltd., 625 Belmont St., Montreal, consult.-engrs.

FOREIGN

▲ **Australia,** Geelong, Victoria-Australian Portland Cement Pty., Ltd., Geelong, Victoria, PLANT ADDN. **$14,000,000.**

▲ **Ceylon**—Ceylon Cement Corp., 14 Barnles Pl., Colombo 7, Ceylon. Kankesantural CEMMENT FACTORY ADDN., Galle Clinker GRINDING PLANT ADDN. **$10,000,000.**

▲ **England**—Powell Duffryn, Powell Duffryn House, 19 Berkeley St., London, W. 1, England, OIL TERMINAL and STORAGE TANKS, First Stage consists 750 ft. deep-WATER TANKER JETTY, Purfleet, Essex. **$3,500,000.**

▲ **France, Paris**—Director-General, United Nations Educational Scientific & Cultural Organization, Place de Frontenoy, Paris 7, OFFICE BLDG. and UNDERGROUND GARAGE at UNESCO's Headquarters. **$3-500,000.** Firms interested should express interest before Oct. 1. CD 10/8/52.

▲ **Hong Kong**—University of Hong Kong, SPORTS CENTER, STUDENT UNION, STAFF QUARTERS, LIBRARY, STUDENT QUARTERS, PRE-CLINICAL CENTER and SCIENTIFIC BLDGS. **$3,508,773.**

▲ **Italy, Ferrandina**—Industeia Chimica del Basento, subsidiary of Montecatini, Societa Generale per l'Industria Mineraria e Chimica, Via Turati, 18, Milan, PLANT to produce plastic fibers from natural gas. **$36,977,491.**

▲ **Italy, Ferrandina**—Industrie Chimiche Meridionali ICM, S.P.A., subsidiary of Manifattura Ceramica Pozzi, Ferrandina, PLANT to produce vinyledene products, methanol, acetic acid and caustic soda. **$32,154,341.**

▲ **Italy, Pisticci**—Azienda Nazionale Idrogenazione Combustibili (ANIC) San Donato Milanese, Italy or 50 Via Tevere, Rome, Italy, PLANT to process hydrocarbone into synthetic fibers and into monomers for plastic materials. **$51,446,950.**

▲ **Jordan**—Council of Jordan, Amman, PUMPING PROJ., water to be pumped to Jerusalem from Ain Fashka Springs near the Dead Sea, Jerusalem. **$2,800,000.**

▲ **Netherlands, Hook of Holland**—N. V. Chemische Industrie Synres, Hook von Holland, PHTALIC ANHYDRIDE PLANT. **$2,209,944.**

For additional reports see CONSTRUCTION DAILY NEWSLETTER

(Proposal Advertisements see pp. 82 to 85)

PNEUMATIC GROUTER and "Pea Shooter"

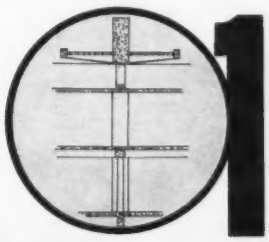
Efficient and easy to operate. Places low pressure grout . . . also injects sodium silicate emulsions to stabilize ground. Readily converts to Pea Shooter. See Catalog No. 13.

MAYO

MAYO

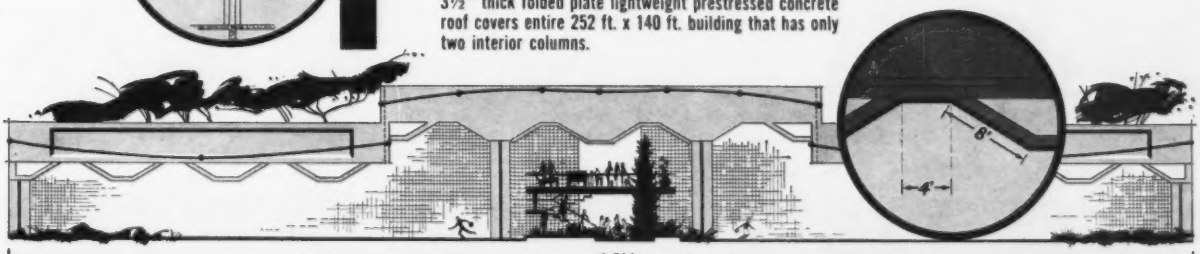
TUNNEL AND MINE EQUIPMENT

Lancaster, Penna.



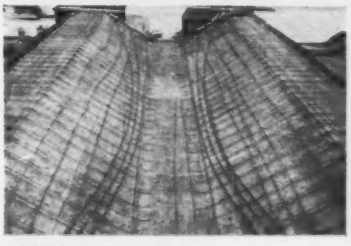
POST-TENSIONED PRESTRESSED CONCRETE BEAM HOLDS ROOF OF 42,500 SQ. FT. BOWLING ALLEY!

3½" thick folded plate lightweight prestressed concrete roof covers entire 252 ft. x 140 ft. building that has only two interior columns.



Three cast-in-place post-tensioned, prestressed concrete beams tied together with Prescon stressing tendons into one long unit make possible the unique structure of a 48 lane bowling alley that has no support columns in the lane area.

The Buccaneer Bowl in Corpus Christi, Texas was constructed at a cost of only $8.40 per square foot using a concrete roof and support beam prestressed by the Prescon System of post-tensioning. This price includes a partial basement, a mezzanine restaurant, observation deck and a luxurious lobby — all air conditioned. The cost of the folded plate and the supporting beams was $1.36 per square foot of area.



Forms built of 4' x 8' plywood sheets ready for pouring of folded plate roof. Stressing tendons provide strength for 70' span.

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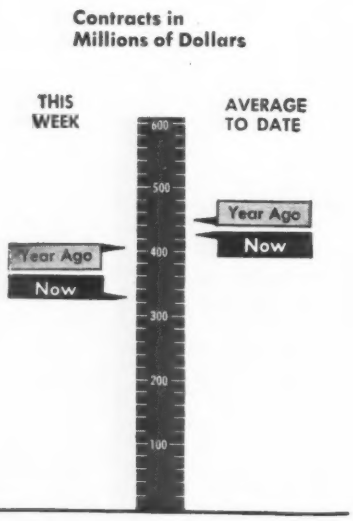
MEMBER PRESTRESSED CONCRETE INSTITUTE

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

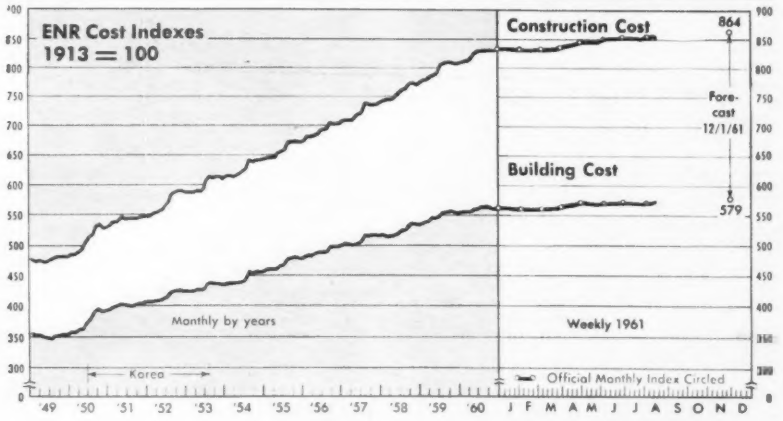
Contracts Awarded In 50 States By Type	This Week	Cum. 34 wks 1961	Chge '60-'61 %
	millions		
All Heavy Construction	$323.5	$14,630.8	− 2
By Ownership			
PRIVATE	150.3	7,052.6	−11
PUBLIC	173.2	7,578.2	+ 8
State & Municipal	152.2	5,793.2	+ 7
Federal	21.0	1,785.0	+ 8
By Type of Work			
PUBLIC			
Waterworks	13.1	266.2	−15
Sewerage	7.1	470.6	+20
Bridges*	5.1	439.1	−19
Highways	66.0	2,525.5	+16
Earthwork, Dams & Waterways	19.0	570.8	+ 6
Buildings:			
Excl. Housing	40.5	1,791.0	+12
Housing	12.0	578.2	+28
Unclassified	10.5	937.3	−10
PRIVATE			
Buildings:			
Mass Housing	66.6	3,178.6	−19
Commercial	36.3	1,735.1	+ 9
Industrial	41.5	1,847.2	+ 2
Unclassified	5.8	291.2	−52

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

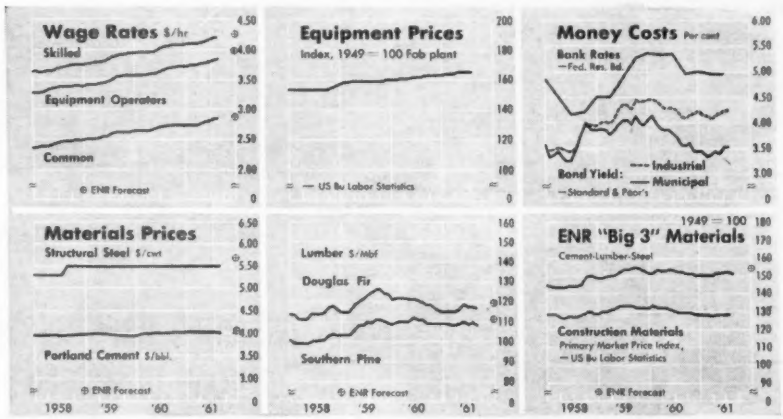
NEW CONSTRUCTION CAPITAL

	Week of Aug. 17	Cum. 33 wks 1961	Chge '60-'61 %
	millions		
Corporate Securities	$ 76.8	$2,268.8	+20
State and Municipal:			
All Except Housing	110.1	4,343.2	− 2
Housing	1.8	94.7	−48
Federal Loans	0	183.7	+59
Federal Aid	0	2,990.6	+10
Total Nonfederal	$188.7	$9,881.0	+ 6
Federal Appropriations:			
Projects in U. S.	0	268.6	−80
Outside U. S.	0	2.3	−99
Total New Capital	$188.7	$10,151.9	− 6


ENR Cost Indexes
1913 = 100
Construction Cost
864
Forecast 12/1/61
Building Cost
579
Monthly by years
Weekly 1961
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 '60 J F M A M J J A S O N D

ENR INDEXES (1913=100), 20-cities' average	Week of Aug. 17 1961	% Change from July 20 1961	% Change from Aug. 18 1960
Construction Cost	854.16	+0.03	+2.9
Building Cost	571.49	+0.04	+1.7

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



MATERIALS SHIPMENTS

	1961 Jun. (J) May (M)	Cum. (No. of Mos.)	% Chg. from Year Ago Mo.	Cum.
Portland Cement, Bur Mines, thous bbls	33,739(J)	139,980(6)	− 1	+ 2
Concrete Paving Awards, PCA, thous sq yd	10,944(J)	55,257(6)	− 1	+ 9
Fabricated Structural Steel, thous tons	361(J)	1,859(6)	− 3	+ 1
Bookings, AISC, thous tons	298(J)	1,859(6)	− 1	− 4
Reinforcing Bars, Net, AISI, thous tons	238(J)	1,166(6)	+13	+12
Lumber, total NIMA, mil fbm	2,933(J)	16,141(6)	−25	−13
Production, total, mil fbm	2,885(J)	15,718(6)	−10	−13
Orders, total, mil fbm	2,819(J)	16,362(6)	− 4	− 5
Douglas Fir, mil fbm	717(J)	3,980(6)	+ 1	−26
Southern Pine, mil fbm	548(J)	3,313(6)	− 8	− 3
Unfilled Orders, Douglas Fir, mil fbm	505(J)	496(6)*	+ 5	−19*
Southern Pine, mil fbm	227(J)	243(6)*	+ 9	+19*
Clay Products, Bureau of Census				
Brick, Unglazed, Common, Face, mil bri	623p(M)	2,304p(5)	− 7	− 5
Vitrified Clay Sewer Pipe, thous tons	166p(M)	646p(5)	− 6	− 5
Structural Tile, Unglazed, thous tons	41p(M)	177p(5)	−18	−13
Asphalt Products, Bureau of Census				
Asphalt Roofing, thous sales sqs	6,517p(M)	18,724p(5)	+22	− 3
Asphalt Siding, thous sales sqs	75p(M)	283p(5)	+21	+ 1
Aluminum, Wrough, Net, Bur Census				
Sheet and Plate (non-heat treatable), mil lbs	114(M)	508(5)	+ 3	− 1
Wire and Cable, mil lbs	31(M)	136(5)	+15	+11
Extruded Shapes (soft alloys), mil lbs	79(M)	334(5)	+ 9	− 1
EMPLOYMENT AND FAILURES				
Contract Const Employment, BLS, thous	3,035p(J)	2,586p(6)*	+ 2	−0.3*
Contractor Failures, Dun & Bradstreet				
Number	222(J)	1,469(6)	+ 4	+15
Liabilities, thous	$12,500(J)	$91,246(6)	−33	+ 7

* Average per month p = preliminary figures

Family-Owned Firm Plays No Favorites

Developing top executives from among-non-family members and sustaining corporate growth without diluting the personal-service qualities of construction rank as major continuing policies of one of the nation's largest family-owned construction-engineering corporations.

The corporation, Rust Engineering Co. of Pittsburgh, guarantees no member of the Rust family a voice in the business and encourages every employee to aim for an executive position. Strongest supporter of the earn-your position policy is S. Murray Rust, Jr., president. He shouldered his present responsibility in 1944 at the age of 32, following in the footsteps of his father, Sterling Murray Rust, Sr., who founded the company in 1905.

But the younger Rust worked to get the job he now holds. He won his engineering degree from Lehigh University, then started as any other employee to prove himself.

Mr. Rust now says, "We feel that a member of the family does not inherit the right to have a say in the business. He does have a right to the broad benefits of career and livelihood, however. A family member is entitled to a trial."

Despite family control and ownership of the company, non-family personnel can and do achieve positions in top management if ability warrants such promotion. Of the seven board members, two have no relationship to the Rust family—John M. Kelley, executive vice president for operations, and R. L. Hess, Jr., vice president and general counsel.

Other board members are Mr. Rust, his cousin, George M. Rust and three brothers-in-law of the president—J. Paul Scheetz, William B. Gillies, Jr. and Arthur M. Over. George Rust, executive vice president, heads the company's 326-man office in Birmingham, Ala.

S. MURRAY RUST, JR.—"We feel that a member of the family does not inherit the right to have a say in the business . . ."

Company officials frankly seek potential top-management talent. "We are anxious to bring into the top echelon those with ability who show willingness to move up within the company," Mr. Rust says. He feels any employee should aspire to top management. "But we frankly concede that the top job—the presidency—is offered to family members. I hope this can be maintained." Apparently the hope will be fulfilled. S. Murray Rust, III, graduated last June from Lehigh University with a bachelor's degree in science. He returns to Lehigh in the fall to get his engineering degree.

The desire to groom employees for positions of executive responsibility stems from a bunching of ages. Five among the top management group count only four years between the oldest and the youngest. Although retirement of these men admittedly poses no immediate problem, any company must think ahead. So to this end, Mr. Rust watches for young engineers who have sales ability and a knack for administration.

Sales ability ranks as the keystone for the success of any company, construction or otherwise. For this reason, Rust Engineering substantially strengthened its sales force, foreign and domestic.

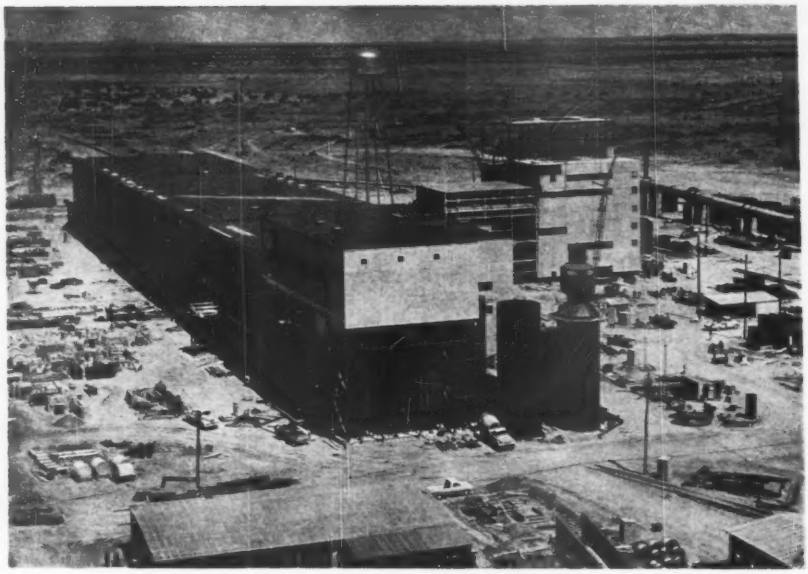
"We are specialists in constructing for basic industries and it is these things—steel, cement, chemicals—that Latin American and Asian economies so badly need," says Mr. Rust.

Recently two executives started an around-the-world survey and study trip. The study will help shape proposals for later submission to industry and foreign governments. And this year or next a Rust employee will travel to Latin America to investigate that market.

A surge in contracts for foreign projects will not only add weight to the profit columns of the company's books, but will also add to the traveling schedules of Mr. Rust and other company executives. Mr. Rust estimates that traveling and inspecting major projects consume more than one-third of his time during a year.

(Please turn the page)

CEMENT PLANT designed and built by Rust Engineering Co. for chemical division of Pittsburgh Plate Glass Co.



PAPER MILL, a $32.5 million Rust Engineering package under way in Arizona.

"Full service goes to the company that makes a contract with us. Our function—our service—is to put materials in place. If you don't see it done and see how it is being done, you can't fully measure your operation," Mr. Rust says.

Several visits to each major project several times a year by both Mr. Rust and Mr. Kelley help assure the client (and Mr. Rust) that Rust Engineering fulfills its contractual obligations fully and efficiently.

But Mr. Rust's and Mr. Kelley's personal attention to a project does not stop after they leave a job site. Mr. Rust, Mr. Kelley or both, meet weekly with project managers. By scheduling these meetings on a rotating basis, each project manager personally delivers his report every four or five weeks. With such a set-up, no long chain of executives separates a project from the two top men; it's the job, the project manager, then Mr. Kelley or Mr. Rust.

Because of the compactness of management, even the quarterly board of directors meetings become operational sessions concerning jobs. Because of the close relationship to each other, the broader company policies and strategy evolve constantly through daily contact of family members and other company executives.

Although the organization structure holds many advantages for both the company and its clients, Mr. Rust concedes one disadvantage to the company. He says: "Our determination to provide service personally to clients can work to inhibit growth. Although we are not standing still, neither do we scramble for every possible job that may loom on the horizon."

The practice of providing personal service to industry returns the reward of steady customers. Since Rust Engineering's founding, 112 companies have each awarded Rust Engineering more than 10 successive contracts.

This repeat business plus new customers pushed the company's billings from $3.5 million in 1939 to more than $60 million last year. And in each of the last three years, the company hit ENR's top contractor list, but not without some year-to-year fluctuations; $41 million in '58, $102 million in '59 and $65 million last year.

Projects built by Rust Engineering run through the alphabet from "A" to "Z"—A-power to zirconium plants. Between the alphabetical extremities are plants that produce brick, cement, electric power, glass, paper, rubber products and steel.

Despite the wide range of major projects, however, executives of Rust Engineering sometimes wonder if the general corporate image takes the form of a towering industrial chimney, one of the corporation's specialties.

These sleek structures lend themselves to dramatic photographic treatment. And since 3,000 Rust-built chimneys dominate the skyline of hundreds of U. S. and foreign communities, residents in each became acquainted with the company through local-newspaper photographs all showing a chimney.

Volume of this Rust subsidiary totals only $5 million, one-third of the total annual chimney market.

The paper and pulp industry ranks as one of Rust Engineering's largest customers. As a result, the company counts itself as the largest designer and builder of paper mills in the U.S. Manufacturing facilities designed and constructed by Rust in 17 different states produce more than 1 million tons of pulp and paper a year.

One of the major projects of this type now under way is a $32-million paper and kraft board mill for Southwest Forest Industries, Inc., at Snowflake, Ariz. Scheduled for completion in the spring of next year, the plant will produce 65,000 tons of kraft board and 75,000 tons of newsprint a year.

One of the company's largest single jobs was a project for the Atomic Energy Commission at Oak Ridge. More than 11,000 persons were on the payroll when this work was under way.

Right now 3,200 persons are on Rust's payroll. This demands big volume. "We like to have a backlog that will pay overhead for 18 months," Mr. Rust says.

Like many other construction companies serving industry, Rust Engineering feels the pinch of competition. "When you find that you obtain only one contract out of 10 you go after instead of one for three, you obviously must shoot more often. And that we are doing," reports Mr. Rust.

"Last year, there was a period where we would be fourth on the list, but there would be three other companies offering to do the work way below our price," he says. "Then early this year," Mr. Rust adds, "we may have been fourth on the list but three others were bunched right with us."

He is certain that "as the pipeline of work fills up, contractors will start quoting cost plus profit. Obviously we have reached a point in the construction business where fewer and fewer people are willing to work for nothing."

This comes as good news to more than top executives at Rust Engineering. Fatter profits for the company mean fatter pay checks for many employees. The company maintains a bonus system. Bonuses go to all those in responsible charge and whose contribution to profit—or loss—can be measured.

Because Rust is a profitable operation, the company attracts would-be buyers. Any such bona fide inquiry receives a polite explanatory reply from Mr. Rust. Generally it says, "the stock of Rust Engineering Company is held for the interest of a very few members of the Rust family. "At the same time, the company has provided a satisfactory vehicle for livelihood, employment and careers for many members of the family connection. We have always considered that a substantial part of our purpose was to fulfill this function and at the same provide needed services for industry. By any ordinary standards, I think it is fair to say, the company is not for sale."

New Methods Sought to Settle Strikes

Construction tie-ups in Oregon and New York point up the weaknesses of present bargaining practices

What safeguards can the construction industry devise against long and costly collective bargaining strikes?

The now-perennial question was being nosed about again last week on both the East and West Coasts, where recent strikes have taken a heavy toll.

Gov. Mark O. Hatfield (D.) of Oregon said he would set up a commission of union and management representatives to draft state legislation to prevent the repetition of strike losses in the construction and other industries.

His proposal followed settlement of a 46-day operating engineers strike in which he had personally intervened. The strike had stalled an estimated $500 million of construction work in Oregon and in five and a half Washington counties.

Meanwhile, in New York City, members of the industry are, in the words of one contractor spokesman, "grasping at straws" and "leaving no avenue unexplored" in their effort to end a crippling seven-week teamster strike that has tied up better than $750 million worth of new construction, throwing more than 50,000 building tradesmen out of work.

Governor Hatfield said one approach to the problem may be formation of state labor courts.

A spokesman for the Associated General Contractors in Portland, Ore., said referral of the operating engineers' contract dispute to the Joint Appeals Board was considered but rejected for two prime reasons:

- Lack of any legislation or authority in the state to back up the JAB procedure.
- An apparent unwillingness on the part of the union's business agent to take any course but his own.

JAB was set up in April by the national AGC and seven international building trades unions, including the teamsters. It is voluntary machinery—and the only one of its kind for general use—for the resolution of labor disputes, other than jurisdictional, without resort to strikes, lockouts or litigation. Its services, which terminate in arbitration, are available to industry members and affiliates of the seven unions if both parties consent to use them. The JAB procedure contains no enforcement machinery.

Portland AGC officials reportedly could not see any merit in using JAB as an experiment, having no knowledge of any other use for the board.

The managing director of the Portland AGC said he feels a decision to use, or not to use, JAB in any given case must depend on the situation. In the operating engineers strike, he explained, acceptance of the governor's offer to mediate the dispute seemed the best course, particularly after the failure of mediation efforts by a federal mediator sent out from Washington, D. C. Although the governor had no legal authority, he said, he could and did act with the authority of his position.

The federal mediator had been in the picture since March 13, 18 days before the old labor contract expired. The settlement was not reached until after the governor's intervention nearly five months later. It came about on August 10, following a 22-hour negotiating session in the governor's office. Terms of the settlement were not disclosed pending union ratification, but the union is reported to have won concessions on a hiring hall and on travel pay and to have obtained annual pay boosts of 20 cents each in a three-year pact.

The strike itself was conducted on a selective or spot basis, with eight projects hit on June 26. The Portland AGC and Home Builders Association countered with requests, later withdrawn, to all contractors to lay off members of the striking union. Jobs crippled by the strike included the $420-million John Day Dam, a Corps of Engineers quarry and jetty job at Megler, a runway project at Kingley Air Force Base and about half of the Oregon Highway Department's projects.

During the course of the strike, the Building Trades Council sanctioned the picket lines. And unfair labor practice charges were filed against each other with the National Labor Relations Board by the contractors and the union.

A 1958 strike of the same union lasted 37 days and halted about $400 million worth of work.

The New York City strike is also a repeat performance but it is considerably more complicated because it involves the teamsters (a non-AFL-CIO union) and individual ready-mix, sand and gravel companies rather than a contractor association. The same union group halted construction work in the city for 10 weeks in the summer of 1953.

The strikers are ready-mixed concrete, sand and gravel drivers in a multi-unit teamster local. Two other units of the same local—excavating and building materials drivers—earlier accepted a wage offer rejected by the striking group.

The strikers, at mass meetings, have turned down three employer offers. And the employers last week rejected what they considered an improper new proposal worked out by mediators and union negotiators. The union is negotiating through a five-man team that is not empowered to make any firm commitments. For this reason, the employers call the committee "irresponsible".

The issues are not clearly defined and involve wages, fringes and conditions. One of the big stumbling blocks is said to be a union demand for a security clause limiting management's right to sell and repair equipment and hire personnel—a clause that is reportedly directed "unrealistically" against owner-operator arrangements.

The employers' last offer included a 25-cent wage increase and 7 cents more in fringes, plus sick leave and shape-up pay in a two-year contract.

Union members were getting $3.50 an hour before the strike, with fringes and normal overtime pushing weekly pay over $200. Annual earnings, according to an employer spokesman, have ranged from $7,000 to $13,000.

Appeals for a quick settlement have been made by various groups to the mayor, the governor and Labor Secretary Arthur Goldberg. City, state and federal mediators have worked on the problem without success. Representatives of the Central Labor Council and the Building Trades Council have attended some of the talks. The powerful Building Trades Employers Association (BTEA), which is not a party to the dispute, has been able to accomplish little. Over the weekend, shop stewards were brought into the negotiations as observers but with no immediate results.

Said a BTEA spokesman: "It seems incredible that, in the days in which we are living, a small group of men can deprive so many of their livelihood."

Use of the Joint Appeals Board had not been suggested as of last week. And

there was some question as to whether the JAB procedure could be used.

A spokesman for the National Sand and Gravel Association, to which some of the struck employers belong, told ENR that his industry does not have enough in common with construction labor problems to get involved, through JAB or otherwise, with construction industry collective bargaining operations.

Arbitration has been suggested informally but given the "cold shoulder treatment," according to one city official. "They are not ready for it," he said. He noted that they had even resented mediation.

In any event, there is no way arbitration can be compelled and there is no Taft-Hartley procedure that can be used in what is a purely local situation.

The governor could appoint a Board of Inquiry under state law if the mediators decide to certify that mediation has failed. But the board could merely engage in fact-finding and issue recommendations and suggestions. The prevalent feeling last week was that such a gesture would be futile. Said one observer: "That kind of pressure will never work if neither party cares what kind of a public image it has."

In the meantime, settlement of the strike may be further postponed by the fact that the strikers have become eligible for unemployment compensation benefits. Most of them will now be getting $65 a week—$15 in union strike benefits and $50 in jobless benefits.

Unions Claim In-Plant Work at Goodyear

Building trades contend rubber workers are doing construction work on a company building project

AFL-CIO building tradesmen in three Ohio counties are trying to prevent the loss of industrial construction work to members of an industrial union at Goodyear Tire and Rubber Co. in Akron.

The Tri-County Building and Construction Trades Council, covering workers in Summit, Medina and Portage counties, claims that Goodyear maintenance workers, who belong to the United Rubber Workers Union, are doing plumbing, steamfitting and electrical work on a $1.5-million addition to Goodyear's research building.

The Council has picketed the project for which the John Ruhlin Construction Co. of Akron is the general contractor. It has also asked the AFL-CIO in Washington for a ruling that the work is new construction belonging to the building trades and not the industrial union.

Goodyear, which says it is in the middle of a jurisdictional dispute between two union groups, had taken no action as of last week.

The company claims that the Goodyear workers are doing work traditionally done by them when Goodyear is constructing a building. The work they perform is not covered by the construction contract.

Since 1953, the company has had a labor agreement providing for the use of Goodyear workers from its engineering division on specific types of work historically performed by the plant employees.

"This practice, stated simply, is to have our own employees do work for which they are equipped and qualified and have traditionally performed, provided it can be done in the allotted time," a Goodyear spokesman said.

The Goodyear dispute could become a test case. Other major rubber firms have similar agreements with URW.

Thomas J. Arconti, president of the Building Trades Council, bases his claim to the work, he said, on the AFL-CIO jurisdictional agreement that declares new construction work to be that of the building trades and routine maintenance work that of the industrial unions. The agreement was drawn up several years ago and is known as the "Miami Agreement." The AFL-CIO is still trying to find some way to resolve such jurisdictional disputes. A special committee, charged with the task of drafting a peace formula, is supposed to have a final report ready for the AFL-CIO convention in Miami Beach at the end of the year.

Mr. Arconti said the pickets at the construction site are directed at the company. "We think it is poor customer relations," he commented, "that they are competing with our services and our contractors in the new construction field." The picket signs state: "Goodyear Tire and Rubber Co. unfair to Akron Building Tradesmen AFL-CIO."

In presenting the position of the rubber workers, Clarence Adkins, president of Local 2, said "so long as our engineering division people are working under the terms of the agreement with Goodyear and are equipped and qualified to do the work, I will insist that they continue to do it."

Bias Curbed in Apprenticeship

Labor Secretary Arthur J. Goldberg has moved administratively against racial discrimination in apprenticeship programs, but a bill now before the House of Representatives would carry the ban further.

In an order that becomes effective September 1, Mr. Goldberg has required that an anti-discrimination clause be inserted in all new apprenticeship agreements under federal sponsorship, and in all apprenticeship programs in companies with federal contracts.

A bill by Rep. Adam Clayton Powell (D., N.Y.) goes somewhat further, and forbids continued federal sponsorship of apprenticeship programs that now discriminate by denying admission of apprentices on the basis of race, color or creed. When he introduced the bill, Mr. Powell specifically charged the building trades with discrimination in the North as well as in the South and in the nation's capital.

Advocates of the Powell bill regard the Goldberg order as too narrow, but Labor Department aides doubt that an administrative order could go much further.

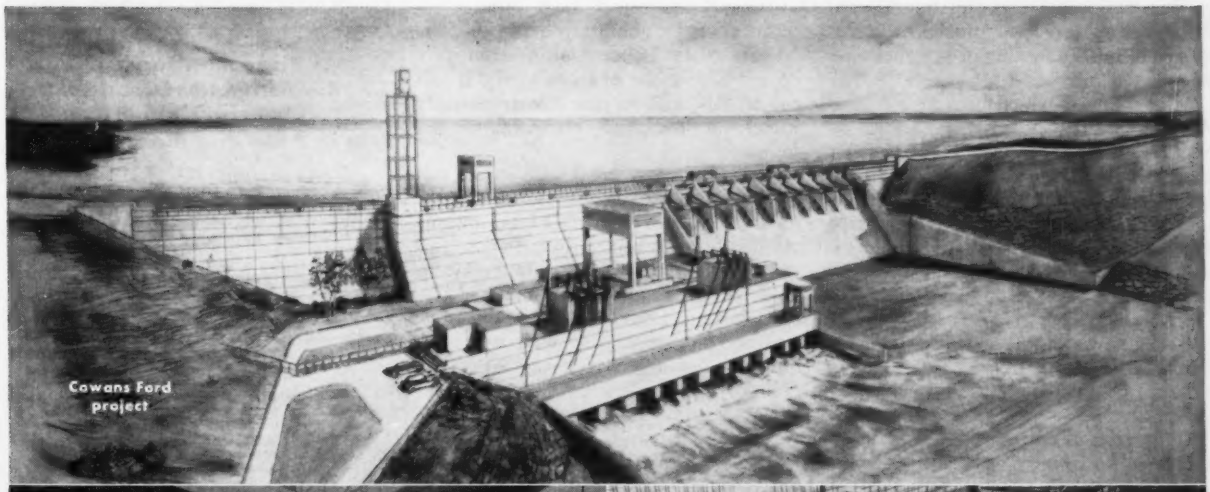
The Goldberg order, incidentally, goes further than the Powell bill by prohibiting the exclusion of qualified women from apprenticeship programs.

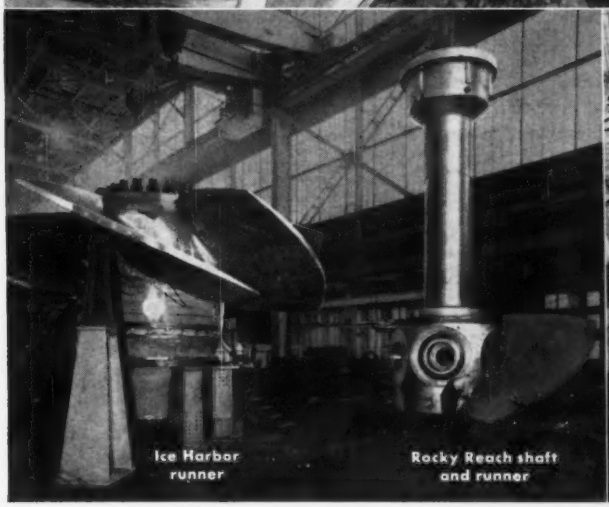
Mr. Goldberg has also ordered aides in his department to try to persuade state apprenticeship organizations to adopt regulations similar to his own order.

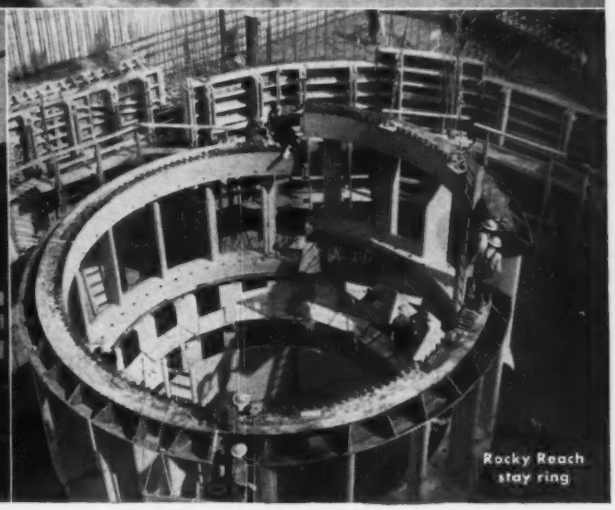
The Powell bill, in addition to cutting off federal sponsorship of discriminatory training programs, would effectively ban the use of apprentices on federal construction work if the apprentices are enrolled in discriminatory programs. It would do this by requiring the payment of journeymen wages to such apprentices.

In hearings this week before a House Labor Subcommittee, AFL-CIO President George Meany conceded that discrimination is practiced in some apprenticeship programs. He urged adoption of the Powell bill and of a fair employment practices act.

ALLIS-CHALMERS







high-head Kaplans for peaking

—previous record-breakers also by Allis-Chalmers

Cowans Ford is the outstanding illustration of Kaplan turbines used to provide peaking capacity. Duke Power Company, with Chas. T. Main Inc. as consulting engineers, has selected A-C Kaplan turbines for operation at 115-ft. head. Each of the three units is guaranteed to provide a maximum of 153,000 hp. Actual operation will involve only a short time each day, meeting peaking requirements of the system which is predominantly steam. The resulting average load factor, *less than 5%*.

KAPLAN RECORD-BREAKERS

Cowans Ford — the third in a series of outstanding A-C Kaplan turbine installations. These units exceed those at both Ice Harbor and Rocky Reach in rated capacity and head. All are similar in construction (those at Cowans Ford are slightly smaller in physical size). Allis-Chalmers diversified experience to date includes over 240 Kaplan turbines — *a record 6 million hp.*

Rocky Reach—public utility district supplied with seven Kaplan turbines, each 140,000 hp (under 92-ft. head).

Ice Harbor — Corps of Engineers installation recently provided with three new A-C Kaplans for operation at 89-ft. head. These held the record with 143,000 hp per turbine until Cowans Ford.

In every facet of hydro generation, people count on record performance and experience from Allis-Chalmers. For assistance anytime, contact your local A-C representative or write to **Allis-Chalmers,** Hydraulic Division, York, Pa.

A-1383

Missile Disputes Get Priority

The National Labor Relations Board last week issued new procedural rules to speed up its handling of jurisdictional disputes at missile sites.

The changes, which became effective August 15, relate to what are known as Section 10(k) hearings. They shorten the period between the filing of charges in jurisdictional disputes and the hearing on the charges, and they eliminate the time-consuming filing of briefs by the parties except on good cause shown to the board.

In issuing the new rules, the NLRB said they would implement President Kennedy's Executive Order 10946. That is the order that established the Missile Sites Labor Commission to assure "uninterrupted and economical" operations at missile sites.

Sec. 8 (b)(4)(D) of the Taft-Hartley Act makes it an unfair labor practice to engage in a work stoppage in an effort to compel a favorable work assignment. And Sec. 10(k) directs the board to "hear and determine" such disputes unless settled by voluntary methods. The Missile Sites Labor Commission procedure is now one of those methods and the NLRB, with its new rules, is actually merely a backstop for Commission failures.

Under the new NLRB policy, it will be possible to accelerate hearings on jurisdictional disputes between unions at missile sites and other defense installations so that the hearing may be held 10 days following the filing of unfair labor practice charges. The old rules ran the 10-day period from the time the notice of hearing was served—and that point is not reached until after the regional director has investigated the merits of the charge.

The new rules, in addition, provide that an effort will be made to get the disputing parties to agree to a hearing on less than 10 days' notice.

The elimination of briefs shortens the 10(k) procedure by seven days.

Labor in Brief . . .

• **Disclosure law**—The House Labor Committee last week favorably reported a bill tightening the 1958 Welfare and Pension Fund Disclosure Act. The bill would require more detailed reporting by fund administrators, give the Labor Department the power to investigate the accuracy of reports and impose new penalties for misuse of funds.

• **Strike ends**—Boston teamsters (ready-mix drivers) returned to work last week after winning a concession on vacation pay. The three-year pact that ended a four-day strike contains a proration schedule for vacation pay and calls for a 15-cent pension plan and 6 cents more in welfare this year, a 10-cent wage boost next year and a two-step 15-cent wage increase the third year.

• **Plumbers settle**—Plumbers and steamfitters in Dallas, Tex., have accepted a two-year, 33¾-cent labor contract that ended a 38-day strike. A 31¼-cent wage increase is payable in three installments (12¼, 12¼ and 6¾ cents) and a 2¼-cent increment in fringes goes into health and welfare. An unfair labor practice complaint issued against the union during the strike is still before the National Labor Relations Board.

• **Unemployment benefits**—A construction worker idled by a strike that does not involve his union can draw unemployment benefits in Delaware even though the law denies compensation for unemployment due to a labor dispute. A Delaware court has ruled that the law cannot be literally construed against innocent victims of others' strikes.

• **Discrimination** — The President's Executive Order 10925 against racial discrimination in government contract work does not apply to contracts for ready mixed concrete, sand or gravel, according to Charles Horsky, counsel for the National Sand and Gravel Association. The opinion relies on the new rules exempting contracts for "standard commercial supplies and raw materials."

• **Right to work**—A two-day national seminar will be conducted in Chicago October 24-25 by the National Right to Work Committee. Purpose is to encourage and assist the "right to work" movement at the local level and to draw public attention to the issue of compulsory unionism. The committee feels the public attitude is favorable to an "all-out nationwide drive."

OFFICIAL PROPOSALS

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

INVITATION FOR BIDS—NO. YS-3-8 CONTROL, COMMUNICATIONS AND STATION SERVICE EQUIPMENT

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed, written bids for furnishing and delivering the following goods, equipment, and materials either fob Contractor's shipping point or cif Bangkok Wharf, Thailand, for the Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents:

Item No. 1—1 Main Control Board and 2 Operator's Desks
Item No. 2—2 Unit Power and Control Boards
Item No. 3—1 Motor Control Center and 4 Power Distribution Boards
Item No. 4—5 Lighting Panelboards
Item No. 5—5 Lighting Transformers
Item No. 6—Plant Communications System
Item No. 7—1 Station Battery
Item No. 8—2 Battery Charging Motor-Generator Sets
Item No. 9—3 Equipment Control Panels
Item No. 10—1 Supervisory Control and Telemetering Switchboard

All of the above items are to be furnished under one schedule and quotations on a given individual item or items will not be considered.

Invitations for Bids will be issued in September, 1961, and will be opened in November, 1961. Copies of Contract Documents, Invitation for Bids No. YS-3-8, Control, Communications and Station Service Equipment, may be obtained by qualified Bidders on written request to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
1901 South Navajo Street
Denver 23, Colorado, U.S.A.

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U.S. $25.00 for each copy of the Contract Documents requested. The remittance is non-returnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

Republic of the Sudan
Widening of the White Nile Bridge

1. Further to the notice issued by the Minister of Local Government inviting applications from firms of established international repute and experience to tender for the design and construction of a reinforced concrete or steel roadway across the River Nile between Omdurman and Shambat.
2. The Contract will also include the construction, to the Consulting Engineers' detailed design, of roadways carried on steel cantilevers on the outer sides of the existing Khartoum-Omdurman Bridge over the White Nile. Each roadway is to be 2012 feet long and 13 feet wide with a footpath 3 feet wide. The widening of the approaches to this Bridge is not included in the works.
3. The Preliminary drawings can be seen at the office of the Director, Ministry of Local Government, Khartoum and the Consulting Engineers Messrs Coode & Partners, Abbey House, Victoria Street, London, S.W.1.
4. It is expected that tender documents will be issued to approved tenderers on the 17th. November 1961 and four months (and no more) will be allowed for the preparation of tenders.
5. Applications to be invited to tender shall be addressed to Director, Ministry of Local Government, Khartoum with copy to the Consulting Engineers on or before the 15th. September 1961 giving full details of the applicants previous experience in the design and construction of such a bridge.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.70 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: September 28, 1961

Sewerage System Project

LOWER SOUTHAMPTON, BUCKS COUNTY, MUNICIPAL AUTHORITY, Lower Southampton Township, Bucks County, Penna.

Sealed proposals for separate Contracts stated below will be received by LOWER SOUTHAMPTON, BUCKS COUNTY, MUNICIPAL AUTHORITY at the Lower Southampton Township Building, 1035 Bustleton Pike, Feasterville, Penna., until 7:00 P.M., E.D.S.T., Thursday, Sept. 28, 1961, and immediately thereafter will be publicly opened and publicly read in the Meeting Hall in the same building.

Proposals will be for furnishing all necessary labor, materials, and equipment, and performing all work of the separate Contracts. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten (10) percent of the bid total, all in accordance with the Contract Documents.

Copies of the Contract Documents may be seen at and obtained from the main office of Gannett Fleming Corddry and Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pa., and all requests for Contract Documents must be directed to that address, together with deposit of the following indicated amounts per set. Checks for deposits shall be made payable to Gannett Fleming Corddry and Carpenter, Inc. Not more than two (2) sets of any particular Contract will be permitted a prospective bidder.

Contract One: CONSTRUCTION OF A SEWERAGE SYSTEM $75.00

NOTE: Contract One is divided into three parts; Part A, Part B, and Part C, as shown on the Drawings and described in the Specifications.

(Bidders will be permitted to submit bids for Part A, Part B, or Part C as separate contracts, and also for any combination of Part A, Part B, and Part C as a combined contract; however, it will be mandatory for all bidders submitting a bid for any combination of Part A, Part B, or Part C as a combined contract, to also submit bids for Part A, Part B, or Part C as separate contracts (whichever parts are included in the combination submitted). The right is reserved to award separate contracts for Part A, Part B, and Part C, or for a combined contract consisting of any combination of Part A, Part B, or Part C, whichever may appear to be in the best interest of LOWER SOUTHAMPTON, BUCKS COUNTY, MUNICIPAL AUTHORITY.)

Contract Two: GENERAL CONSTRUCTION OF PUMPING STATIONS $30.00

Contract Three: PLUMBING WORK FOR PUMPING STATIONS. $25.00

Contract Four: HEATING WORK FOR PUMPING STATIONS. $25.00

Contract Five: ELECTRICAL WORK FOR PUMPING STATIONS. $25.00

Copies of the Contract Documents may also be seen (but not obtained) at branch offices of Gannett Fleming Corddry and Carpenter, Inc., located at 12 East Montgomery Ave., Ardmore, Pa. and 5823 Penn Ave., Pittsburgh, Pa., and at the Lower Southampton Township office in the Township Building at the address given above.

Full refund will be made only to actual bidders on the Contracts stated above, for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calendar days after bid opening. Refund for return of all other sets within the same period, whether taken out by bidders or non-bidders, will be fifty (50) per cent of deposit. No refund will be made for Contract Documents returned later than fifteen (15) calendar days after bid opening.

The Owner reserves the right to reject any or all Proposals.

No Proposal may be withdrawn for a period of Sixty (60) days after the date and time designated herein for the opening thereof.

Completion times for the work covered by the Contracts from the date of the Notice to Proceed are as follows:

Contract One—Parts A, B and C—each five hundred and forty (540) calendar days.

Contracts Two, Three, Four and Five—each three hundred and sixty (360) calendar days.

LOWER SOUTHAMPTON, BUCKS COUNTY, MUNICIPAL AUTHORITY

Gannett Fleming Corddry and Carpenter, Inc., Engineers

Bids: September 19, 1961

Construction of Safety, Health & Welfare Building—Richmond, Virginia

Sealed bids in duplicate will be received at the office of the Director of General Services, City of Richmond, Virginia, 2907 North Boulevard, Richmond, Virginia until but not later than 11:00 A.M., D. S. T., Tuesday, September 19, 1961, and then publicly opened and read aloud for the construction of a Safety, Health and Welfare Building in the Civic Center, City of Richmond, at 501 North Ninth Street, Richmond, Virginia, in accordance with plans and specifications prepared by Ballou and Justice, Architects and Engineers, Richmond, Virginia.

Drawings and specifications for the above project will be available at the office of Ballou and Justice, 300 West Franklin Street, Richmond, Virginia, on and after August 14, 1961.

Applications requesting drawings and specifications not to exceed four (4) sets per applicant, together with payment of One Hundred and Fifty Dollars ($150.00) per set, should be filed with the Architect and the desired material will be forwarded, shipping charges collect. General Contractors who have submitted bids, upon returning this material in good condition within ten (10) days after bid opening, will be refunded the full amount on two (2) sets and Twenty-Five Dollars ($25.00) on additional sets. All others will be refunded Twenty-Five Dollars ($25.00) on each set.

Drawings and specifications may be examined at the office of Ballou and Justice, the office of the Director of General Services, City of Richmond, The Builder's Exchange, The Dodge Plan Room and the Associated General Contractors of America, all of Richmond, Virginia; The Dodge Plan Room of Atlanta, Georgia; The Dodge Plan Room and Associated General Contractors of America, of Charlotte, North Carolina; the Chamber of Commerce, Lynchburg, Virginia; The Dodge Plan Room and the Chamber of Commerce of Roanoke, Virginia; The Dodge Plan Room and the Builders and Contractors Exchange of Norfolk, Virginia; The Dodge Plan Room of Washington, D. C.; and The F. W. Dodge Corporation of Baltimore, Maryland.

Bids must be accompanied by a certified check for 5% of the Base Bid or an acceptable bidder's bond in the amount of 6% of the Base Bid, made payable to the City of Richmond. All bidders bidding in amounts exceeding $20,000.00 must be registered as Contractors in the Commonwealth of Virginia.

J. W. Huffman, Director
Department of General Services
City of Richmond, Virginia

Bids: August 29, 1961

Cannonsville Bridge Contract 464

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M. Eastern Daylight Saving Time on Tuesday, August 29, 1961, for Contract 464, for the construction of the Cannonsville Bridge across the Cannonsville Reservoir, including short portions of the adjoining highway approaches. The Cannonsville Bridge will be a two lane highway bridge with a superstructure supported by six piers and two abutments. The piers and abutments will be founded on cast-in-place concrete piles and will be constructed of reinforced concrete with certain portions faced with granite. The superstructure will have a total length of 1,200 feet between abutment bearings and will consist of seven spans of structural steel girders and a deck of reinforced concrete. The deck will have a roadway surfaced with asphalt concrete and a safety walk with steel railing at each side. There are included in this contract approximately 360 linear feet of adjoining highway work on the southerly side and approximately 400 linear feet on the northerly side of the Cannonsville Bridge. These highway approaches to the bridge will be paved with asphalt concrete. All work shall be as set forth in the specifications.

Pamphlets of the contract can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $10.00 for each pamphlet. There will be a charge of $1.50 to cover mailing costs for each set of contract pamphlets requested. For further particulars apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; MARTIN T. GERAGHTY, Chief Clerk.

CONTRACTORS WATCH THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: See Advertisement

North Section Twelve Towns Relief Drains Oakland County, Michigan Contracts NS-1 Through NS-7

Sealed proposals will be received by the DRAINAGE BOARD FOR THE TWELVE TOWNS RELIEF DRAINS, Oakland County, Michigan, at the Supervisor's Meeting Room, 4th Floor, Oakland County Office Building, 1 Lafayette Street, Pontiac, Michigan, for the construction of certain drains and structures, including the following approximate quantities.

Proposals will be received for the several Contracts up to 2:00 o'clock P.M., E.S.T., on the dates set forth herein.

PROPOSALS TO BE RECEIVED SEPTEMBER 19, 1961
CONTRACT NS-2

3564 lin. ft.	13'-0" Special Horseshoe—Open Cut
4852 lin. ft.	13'-0" Round—Tunnel
1621 lin. ft.	11'-0" Round—Open Cut
55 lin. ft.	11'-0" Round—Tunnel
16 lin. ft.	8'-0" Round—Open Cut

CONTRACT NS-5

948 lin. ft.	7'-6" Round—Open Cut
2030 lin. ft.	7'-0" Round—Open Cut
890 lin. ft.	6'-6" Round—Open Cut
1443 lin. ft.	6'-0" Round—Open Cut
491 lin. ft.	'60" Round—Open Cut
613 lin. ft.	42" Round—Open Cut
1458 lin. ft.	36" Round—Open Cut

CONTRACT NS-6

1987 lin. ft.	8'-0" Round—Open Cut or Tunnel
3855 lin. ft.	8'-0" Round—Open Cut
80 lin. ft.	8'-0" Round—Tunnel
2881 lin. ft.	7'-0" Round—Open Cut
1008 lin. ft.	6'-6" Round—Open Cut
2484 lin. ft.	6'-0" Round—Open Cut
70 lin. ft.	6'-0" Round—Tunnel
1382 lin. ft.	5'-6" Round—Open Cut

PROPOSALS TO BE RECEIVED SEPTEMBER 22, 1961
CONTRACT NS-4

2089 lin. ft.	12'-0" Round—Open Cut or Tunnel
3135 lin. ft.	11'-0" Round—Open Cut or Tunnel
150 lin. ft.	10'-6" Round—Tunnel

PROPOSALS TO BE RECEIVED SEPTEMBER 26, 1961
CONTRACT NS-3

4142 lin. ft.	7'-6" Round—Tunnel
2128 lin. ft.	7'-6" Round—Open Cut
1156 lin. ft.	7'-0" Round—Open Cut
140 lin. ft.	7'-0" Round—Tunnel
2227 lin. ft.	6'-0" Round—Open Cut or Tunnel
362 lin. ft.	6'-0" Round—Open Cut
1864 lin. ft.	5'-6" Round—Open Cut
1725 lin. ft.	60" Round—Open Cut
309 lin. ft.	60" Round—Tunnel
2295 lin. ft.	54" Round—Open Cut
75 lin. ft.	48" Round—Tunnel
672 lin. ft.	48" Round—Open Cut
75 lin. ft.	42" Round—Tunnel

CONTRACT NS-7

4238 lin. ft.	9'-0" Round—Tunnel

PROPOSALS TO BE RECEIVED SEPTEMBER 29, 1961
CONTRACT NS-1

5189 lin. ft.	15'-0" Special Horseshoe—Open Cut
5155 lin. ft.	10'-0" Special Horseshoe—Open Cut
111 lin. ft.	9'-0" Round—Tunnel
1036 lin. ft.	9'-0" Round—Open Cut
608 lin. ft.	8'-0" Round—Open Cut
745 lin. ft.	6'-0" Round—Open Cut
2003 lin. ft.	5'-6" Round—Open Cut
547 lin. ft.	60" Round—Open Cut
833 lin. ft.	54" Round—Open Cut
482 lin. ft.	42" Round—Open Cut

together with junction chambers, manholes, straight through structures, angle structures, drop structures, connections and other appurtenances.

All Bidders shall have prequalification rating by the Michigan State Highway Department for the appropriate dollar volume and classification of work bid, and shall submit evidence with his bid of this prequalification rating.

The drawings and specifications under which the work will be done are on file and may be examined at the office of the Board, 317 E. Eleven Mile Road, Royal Oak, Michigan, at the office of the Oakland County Drain Commission, 550 S. Telegraph Road, Pontiac, Michigan, and at the Detroit offices of Builders and Traders and Dodge Reports. Copies thereof may be obtained from the office of McNamee, Porter and Seeley, Consulting Engineers, Ann Arbor, Michigan, by making a deposit of $25.00 (checks only), for each set of contract documents divisions of the work to be bid each day on and one set of plans covering a division or which proposals are to be received. The full amount of the deposit will be refunded to the bidder for one set of documents and plans upon which a bona fide proposal has been submitted. For other sets of documents, $10.00 will be refunded for each set returned in good condition within 10 days after the bidding.

OFFICIAL PROPOSALS

A certified check or bidder's bond for a sum not less than five per cent (5%) of the amount of the proposal will be required with each proposal.

The right is reserved by the Owner to accept any proposal, to reject any proposal and to waive irregularities in proposals.

Bids shall be firm for 30 days after the respective dates of opening, within which period of time the Drainage Board shall award contracts. Each Contract shall contain the following provision:

"This Contract is executed and delivered subject to the sale and delivery of the necessary bonds to complete the Twelve Towns Relief Drains. If such sale and delivery shall not be effected prior to March 1, 1962, then either party may terminate this Contract without liability."

DANIEL W. BARRY, CHAIRMAN
DRAINAGE BOARD FOR THE
TWELVE TOWNS RELIEF DRAINS
OAKLAND COUNTY, MICHIGAN

Bids: See Advertisement

Middle Section and Outlet Structure Twelve Towns Relief Drains Oakland County, Michigan Divisions MS-1 Through MS-6, and OS-1

Sealed proposals will be received by the DRAINAGE BOARD FOR THE TWELVE TOWNS RELIEF DRAINS, Oakland County, Michigan, at the Supervisor's Room, Fourth Floor, Oakland County Office Building No. 1 Lafayette Street, Pontiac, Michigan, for the construction of certain drains and structures, including the following approximate quantities.

Proposals will be received for the several Divisions up to 2:00 o'clock P.M., E.S.T., on the dates set forth herein, at which time all bids will be publicly opened and read.

PROPOSALS TO BE RECEIVED TUESDAY, SEPTEMBER 19, 1961:
DIVISION MS-1

9,654 lin. ft.	13'-3" Tunnel Drain
200 lin. ft.	11'-0" Railroad Section Tunnel Drain
1 each	Regulator Chamber
3 each	Junction Boxes
8 each	Manholes

PROPOSALS TO BE RECEIVED FRIDAY, SEPTEMBER 22, 1961:
DIVISION MS-2

3,369 lin. ft.	11'-0" Tunnel Drain
4,630 lin. ft.	9'-0" Tunnel Drain
1,993 lin. ft.	7'-6" Tunnel Drain
2 each	Junction Boxes
8 each	Manholes

PROPOSALS TO BE RECEIVED FRIDAY, SEPTEMBER 22, 1961:
DIVISION MS-5

1,690 lin. ft.	9'-0" Open Cut Drain
2,130 lin. ft.	8'-6" Open Cut Drain
1,253 lin. ft.	8'-0" Open Cut Drain
2,710 lin. ft.	6'-0" Open Cut Drain
1 each	Junction Box
15 each	Manholes

PROPOSALS TO BE RECEIVED TUESDAY, SEPTEMBER 26, 1961:
DIVISION MS-3

11,726 lin. ft.	9'-6" Tunnel Drain
1 each	Junction Box
9 each	Manholes

DIVISION OS-1

1 each	Outlet Structure at Red Run

PROPOSALS TO BE RECEIVED FRIDAY, SEPTEMBER 29, 1961:
DIVISION MS-4

1,990 lin. ft.	7'-0" Tunnel Drain
821 lin. ft.	5'-6" Tunnel Drain
767 lin. ft.	5'-0" Tunnel Drain
1,680 lin. ft.	42" Tunnel Drain
883 lin. ft.	7'-6" Open Cut Drain
3,170 lin. ft.	7'-0" Open Cut Drain
850 lin. ft.	4'-0" Open Cut Drain
1,150 lin. ft.	42" Open Cut Drain
912 lin. ft.	36" Open Cut Drain
1 each	Junction Box
22 each	Manholes

PROPOSALS TO BE RECEIVED FRIDAY, SEPTEMBER 29, 1961:
DIVISION MS-6

1,215 lin. ft.	7'-0" Open Cut Drain
1,832 lin. ft.	6'-6" Open Cut Drain
1,697 lin. ft.	6'-0" Open Cut Drain
1,539 lin. ft.	5'-6" Open Cut Drain
950 lin. ft.	5'-0" Open Cut Drain
1,679 lin. ft.	4'-6" Open Cut Drain
496 lin. ft.	4'-0" Open Cut Drain
1 each	Junction Box
18 each	Manholes

All Bidders shall have pre-qualification rating by the Michigan State Highway Department for the appropriate dollar volume and classification of work bid, and shall submit evidence with their bids of this prequalification rating.

OFFICIAL PROPOSALS

The drawings and specifications under which the work will be done are on file and may be examined at the Office of the Board at 317 East First Street (11 Mile Road), Royal Oak, Michigan; at the Office of the Oakland County Drain Commissioner at 550 South Telegraph Road, Pontiac, Michigan; and at the Detroit Offices of Builder's and Traders, and Dodge Reports. Copies thereof may be obtained from the Office of Hubbell, Roth & Clark, Inc., Consulting Engineers, 954 North Hunter Boulevard, Birmingham, Michigan, by making a deposit of Twenty-Five Dollars ($25.00) (CHECK ONLY), for each set of contract documents and set of plans covering a Division or Divisions of the work for each day on which proposals are to be received. The full amount of the deposit will be refunded to the bidder for one set of documents and plans upon which a bona fide proposal has been submitted. For other sets of documents, Ten Dollars ($10.00) will be refunded for each set returned in good condition within Ten (10) days after the bidding date.

A certified check or bidder's bond, for a sum not less than Five Per cent (5%) of the amount of the proposal, will be required with each proposal.

The right is reserved by the Owner to accept any proposal, to reject any proposal, and to waive irregularities in proposals.

DANIEL W. BARRY, CHAIRMAN
DRAINAGE BOARD FOR THE
TWELVE TOWNS RELIEF DRAINS
OAKLAND COUNTY, MICHIGAN

Bids: See Advertisement

South Section Twelve Towns Relief Drains Oakland County, Michigan Contract SS-1 Through SS-8

Sealed proposals will be received by the DRAINAGE BOARD FOR THE TWELVE TOWNS RELIEF DRAINS, Oakland County, Michigan, at the Board of Supervisor's Room, 4th Floor, Court House Office Building, No. 1 Lafayette Street, Pontiac, Michigan, for the construction of certain drains and structures, including the following approximate quantities.

A portion of this project is on the Interstate System under the Federal Aid Highway Act of 1956. As defined under Section 115, the Davis-Bacon Act is applicable and requires the Secretary of Labor to determine the minimum wage rates to be paid by the contractor and sub-contractors, which rates will be given in detail in the proposal.

All Bidders shall have prequalification rating by the Michigan State Highway Department for the appropriate dollar volume and classification of work bid and shall submit evidence with their bids of this prequalification rating.

Proposals will be received for the several contracts up to 2:00 o'clock P.M. E.S.T. on the dates set forth herein.

PROPOSALS TO BE RECEIVED TUESDAY, SEPTEMBER 19, 1961:
CONTRACT SS-1

3,330	lin. ft. Reinforced Concrete Triple Box Drain (Each box 14'3"x13'3")
2,150	lin. ft. Reinforced Concrete Double Box Drain (Each box 14'3"x13'3")
192	lin. ft. 5'6" Sanitary Interceptor relocation.
1	Junction Chamber
11	Manholes
11,400	sq. yds. Bituminous Concrete Surfacing

CONTRACT SS-4

10,608	lin. ft. 10'6" Tunnel Drain
2,679	lin. ft. 9'6" Tunnel Drain
1,152	lin. ft. 7'0" Tunnel Drain
674	lin. ft. 2'0" Open Cut Drain
3	Junction Chambers
16	Manholes

PROPOSALS TO BE RECEIVED FRIDAY, SEPTEMBER 22, 1961:
CONTRACT SS-2

5,674	lin. ft Reinforced Concrete Double Box Drain (Each box 14'3"x13'3")
2,268	lin. ft. 6'0" Open Cut Drain
2	Junction Chambers
12	Manholes

CONTRACT SS-6

2,576	lin. ft. 12'0" Tunnel Drain
2,023	lin. ft. 10'0" Tunnel Drain
2,997	lin. ft. 9'6" Tunnel Drain
8,450	lin. ft. 8'6" Tunnel Drain
635	lin. ft. 4'0" Tunnel Drain
721	lin. ft. 4'0" Open Cut Drain
2	Junction Chambers
24	Manholes

(Continued on opposite page)

OFFICIAL PROPOSALS
(Continued from opposite page)

PROPOSALS TO BE RECEIVED TUESDAY, SEPTEMBER 26, 1961:
CONTRACT SS-3
3,608 lin. ft. Reinforced Concrete Double Box Drain (Each box 14'3"x13'3")
1,694 lin. ft. Reinforced Concrete Single Box Drain, 15'6"x13'3"
2,611 lin. ft. 7'0" Tunnel Drain
630 lin. ft. 3'0" Equivalent Tunnel Drain
760 lin. ft.10'6" Open Cut Drain
532 lin. ft. 11'6" Open Cut Drain
1,030 lin. ft. 4'6" Open Cut Drain
1 Regulating Chamber
4 Junction Chambers
22 Manholes
PROPOSALS TO BE RECEIVED TUESDAY, SEPTEMBER 26, 1961:
CONTRACT SS-5
2,298 lin. ft. 9'0" Tunnel Drain
176 lin. ft. 7'6" Tunnel Drain
1,097 lin. ft. 5'6" Tunnel Drain
1,352 lin. ft. 4'6" Tunnel Drain
577 lin. ft. 9'6" Open Cut Drain
1,100 lin. ft. 8'6" Open Cut Drain
2,485 lin. ft. 7'6" Open Cut Drain
1,501 lin. ft. 6'6" Open Cut Drain
838 lin. ft. 6'0" Open Cut Drain
891 lin. ft. 5'6" Open Cut Drain
1,907 lin. ft. 5'0" Open Cut Drain
4 Junction Chambers
27 Manholes
PROPOSALS TO BE RECEIVED FRIDAY, SEPTEMBER 29, 1961:
CONTRACT SS-7
538 lin. ft. 8'6" Open Cut Drain
1,473 lin. ft. 8'0" Open Cut Drain
2,668 lin. ft. 7'6" Open Cut Drain
1,000 lin. ft. 7'0" Open Cut Drain
874 lin. ft. 6'6" Open Cut Drain
2 Junction Chambers
10 Manholes
CONTRACT SS-8
2,268 lin. ft. 11'6" Tunnel Drain
1,862 lin. ft. 9'0" Tunnel Drain
2,325 lin. ft. 9'6" Open Cut Drain
1,812 lin. ft. 7'0" Open Cut Drain
1,097 lin. ft. 6'0" Open Cut Drain
2,595 lin. ft. 4'6" Open Cut Drain
168 lin. ft. 5'0" Open Cut Drain
599 lin. ft. 8'0" Open Cut Drain
514 lin. ft. 2'6" Open Cut Drain
2 Junction Chambers
14 Manholes

The drawings and specifications under which the work will be done are on file and may be examined at the office of the Board at 317 E. 11 Mile Road, Royal Oak; at the Office of the Oakland County Drain Commissioner at 550 South Telegraph Road, Pontiac; and at the Detroit Offices of Builders' and Traders' and Dodge Reports. Copies thereof may be obtained from the office of Pate and Hirn, Inc., Consulting Engineers, 532 Michigan Building, Detroit 26, Michigan, by making a deposit of Twenty Five Dollars ($25.00), (Check only), for each set of contract documents and set of plans covering a Contract or Contracts of the work for each day on which proposals are to be received. The full amount of the deposit will be refunded to the bidder for one set of documents and plans upon which a bona fide proposal has been submitted. For other sets of documents Ten Dollars ($10.00) will be refunded for each set returned in good condition within ten (10) days after the bidding date.

A certified check or bidder's bond for a sum not less than five per cent (5%) of the amount of the proposal will be required with each proposal.

The right is reserved by the Owner to accept any proposal, to reject any proposal and to waive irregularities in proposals.

Bids shall be firm for 30 days after the respective dates of opening, within which period of time the Drainage Board shall award contracts. Each contract shall contain the following provision:

This contract is executed and delivered subject to the sale and delivery of the necessary bonds to complete the Twelve Towns Relief Drains. If such sale and delivery shall not be affected prior to March 1, 1961, then either party may terminate this contract without liability.

DANIEL W. BARRY, CHAIRMAN
DRAINAGE BOARD FOR THE
TWELVE TOWNS RELIEF DRAINS
OAKLAND COUNTY, MICHIGAN

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

OFFICIAL PROPOSALS

Bids: September 5, 1961

The Port of New York Authority
The Port of New York Authority Facilities

WATER TREATMENT SERVICE
CONTRACT O & M 663

Sealed proposals for Water Treatment for the prevention of corrosion and scale in Heating, Air Conditioning, and circulating water systems at Port of New York Authority Facilities will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. o'clock, Tuesday, September 5, 1961, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.
THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt
Chairman

New York, August 24, 1961

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5654) will be received at Dutch John, Utah, until 2 p.m., Mountain Standard Time, September 26, 1961, for furnishing labor and materials for Earthwork, Structures, and Surfacing Relocation Wyoming State Highway No. 530, Flaming Gorge Unit, Utah-Wyoming, Colorado River Storage Project. Location near Green River, Wyoming in Sweetwater County. Principal items are Excavation 256,000 cu. yds.; Furnishing and erecting structural steel 525,000 lbs.; and other work. Completion time 270 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City, Utah; Dutch John, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.70 a line per issue.

OFFICIAL PROPOSALS

District of Columbia—Building Construction—Dept. of Buildings & Grounds, D. C. CONSTRUCTION OF INFIRMARY AND ADMISSIONS BUILDING, JUNIOR VILLAGE, BLUE PLAINS, S.W., WASHINGTON, D. C. (Invitation No. C6233-B). Wage rates have been pre-determined by Labor Dept. Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave. N.W., upon deposit of a certified check for $25.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, September 5, 1961, in Room 424, 499 Penn. Ave. N.W.

EMPLOYMENT OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• *POSITIONS VACANT*

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. **Preference will be given to applicants with practical experience. Permanent position with** established **firm** in business since 1929. **Moving expenses paid.** Send resume, including **education, experience, and personal qualifications to P-6245.** Engineering News-Record.

Sanitary Engineer. Opportunity to assume overall supervision and client contact on sanitary projects for long-established midwestern consulting engineering firm. Experience in all phases of sanitary work is desired. Send complete resume of experience and qualifications. Replies held in strictest confidence. Our employees know of this advertisement. P-7178, Engineering News-Record.

Estimators—Civil, Mech., Electrical: Checking change orders. Please send resume. All replies confidential. P-7176, Engineering News-Record.

Permanent openings for Resident Engineers experienced in supervision of construction of large steam power plants and/or high-voltage transmission lines. Degree and registration desirable. Excellent opportunity with consulting engineering firm. Please send resume of education and experience to P-7228, Engineering News-Record.

Materials Engineer: concrete, asphalt, aggregates. Commercial laboratory, N. Y. Metropolitan area. P-7223, Engineering News-Record.

Engineer, Civil-Structural. Minimum 5 years responsible design experience in structures, bridges and foundations. **Excellent opportunity in established organization for a competent engineer with initiative and leadership potential. Before interview, please send complete resume of education, experience and qualifications including salary expected to Charles W. Yoder & Associates, 3505 W. Center St., Milwaukee 10, Wis.**

Graduate Engineer, Estimator and Superintendent for heavy construction-bridge and dam construction. Location Ohio and Pennsylvania. P-7245, Engineering News-Record.

North American Mining Company requires Tunnel Inspector with 10 to 15 years tunnel driving and inspection experience in responsible positions, plus knowledge of accounting and warehousing end of business, to act as company representative, with U.S. contractor, for minimum 3 years, during driving of 2 parallel, seven mile long tunnels. Portal located two hours from Peru's capital city of Lima. Age to 55, single or married with small family preferred. Transportation, housing, liberal vacation policy and other fringe benefits. Salaries commensurate with experience. Send resume detailing experience to: Employment Division, Cerro de Pasco Corporation, 300 Park Avenue, New York, N. Y. All replies acknowledged.

(Continued on the following page)

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE

The advertising rate is $45.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

SEPT. 7TH ISSUE CLOSES AUGUST 25TH

UNDISPLAYED RATE

$2.70 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36

INDUSTRIAL ENGINEER

The City of Lakeland, Florida, Department of Electric and Water Utilities, is accepting applications for position of Industrial Engineer. Applicants must have degree in mechanical, electrical or industrial engineering with at least five years in supervisory or staff responsibilities in public or private utility plant. Approximately ten years experience in various phases of industrial engineering. Excellent opportunity. Salary $10,000 to $12,000. Retirement, leave and insurance benefits. Contact Emory E. Walker, Personnel Director, Civil Service Office, City Hall, Lakeland, Florida, or C. D. McIntosh, Jr., Director of Department of Electric and Water Utilities, City Hall, Lakeland, Florida.

SPECIFICATION WRITER

Experienced in sanitary engineering, capable of heading up specification division with growing consulting engineering firm. Excellent opportunity for right man. New England location. Resume in confidence.

P-7252, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

• *POSITIONS VACANT*
(Continued from preceding page)

Civil Engineer for Overseas Work with design experience to head civil department. Age thirty to forty preferred. Top salary and living allowance for two year assignment. Send resume and photograph to P-7306, Engineering News-Record.

Engineer, Structural — Permanent position with Consulting Civil Engineering firm in upstate New York. College graduate. Send resume including education, experience, personal qualifications and salary desired. P-7285, Engineering News-Record.

General Superintendent-Project Manager refinery construction project California. Submit experience record. P-7324, Engineering News-Record.

Architect-Engineer's New York City office requires services of Engineer—5 to 10 years construction experience — estimating — cost analysis—pricing—specification interpretation—writing of sub-contracts. Send summary of experience salary expected to P-7294, Engineering News-Record.

Company specializing in imported structural hardwoods requires active salesman to promote their use for heavy construction. Some engineering knowledge desirable. Position requires some traveling. P-7288, Engineering News-Record.

Surveying Instruments. Repair man for well-established firm 10 miles from N.Y.C. Interview can be arranged in your area. $8,000 or higher, depending on experience. No traveling. Fennel Instrument Corp., 50 Colfax Ave., Clifton, N. J. PRescott 3-7100.

Sr. Specifications Writer for N.Y. Consulting Engineering firm. Familiar with heavy construction and preparation of specifications for government projects. P-7313, Engineering New-Record.

Estimator, heavy construction experience, for N. Y. Consulting Engineering office. Prior estimating experience with construction contractor preferred. P-7319, Engineering News-Record.

Highway Superintendent. Experienced in general excavation and concrete paving. State salary required and send resume of qualifications and experience to P-7286, Engineering News-Record.

ASSOCIATION MANAGER

Pipe Association in sanitary field, with headquarters in Northeastern-Midwest, has opening for college graduate sanitary or civil engineer in the 35-45 age bracket.

Must be fluent, have administrative experience, be capable of leading and inspiring a small group of promotional engineers and reporting results to membership, both verbally and in writing. Must be willing to travel at least three days per week.

Initial salary $12,000 per year with big opportunity for advancement, dependent upon results.

Submit resume and current photograph to

P-7303 Engineering News-Record
645 N. Michigan Ave., Chicago 11, Ill.

HIGHWAY BRIDGE DESIGNERS

For work in northern Illinois.
Minimum 5 years experience.
Usual Benefits — Permanent.

Maccabee, Campbell & Assocs.
173 W. Madison St., Chicago 2, Ill.

• *POSITIONS VACANT*

Wanted: Civil Engineer with water and sewage treatment design experience—location Mid-west. Submit complete resume, salary and availability. Write P-7189, Engineering News-Record.

Assistant Director of Public Works. Salary $6744-$8616. Graduate Civil Engineer, two or more years municipal administrative experience. Apply Personnel Department, City Hall, Springfield, Missouri.

Director of Engineering. Ph. D. degree in the field of E.E. or M.E. preferred. Will consider applicant with Master's degree and considerable experience. Responsible for administration and development of four engineering departments. Salary $11,000 up. Location Middle-South. P-7238, Engineering News-Record.

Professor or Associate Professor of Electrical Engineering to teach courses in Electric Circuits and Energy Conversion. Must have Master's Degree in Electrical Engineering. Salary up to $9000. for nine-month tenure. Location Middle-South. P-7240, Engineering News-Record.

Assistant Professor, Electrical Engineering to teach fundamental courses in Electrical Engineering. Must have Master's degree. Salary up to $7200. for nine-month tenure. Location Middle-South. P-7242, Engineering News-Record.

Engineers experienced in design of water and sewage projects. Location, Ohio. Send complete resume and salary requirement. P-7218, Engineering News-Record.

Excellent Opportunity—Wanted young, ambitious, graduate civil engineer with minimum of five years experience in all phases of estimating. Will assist successful young, chief estimator for growing East-West Coast construction company. Submit resume including salary, references and availability to P-7256, Engineering News-Record.

Superintendent Experienced in gas and telephone line construction—Eastern location. P-7196, Engineering News-Record.

BUILDING CONSTRUCTION SUPERINTENDENT

Salary Open

Midwest location—Must have proven experience in multiple story reinforced concrete and coordination of mechanical, electrical and other subcontractors.

Age—under 50. Give full details, education, personal data, experience and references.

P-7342, Engineering News-Record
645 N. Michigan Ave., Chicago 11, Ill.

• *POSITIONS WANTED*

General Superintendent-Proj. Mgr. Hvy Const. roads, bridges, bldgs, flood control tunnels, sewage & sewage disp. Concrete mech. background. PO Box 48 Clayton 5 Mo.

Yng Woman, Admin. Asst., Gal Fri. Exec. Secty, considerable exper. all phases genl constr. office. All office skills-knowl. of plans, specs, & expedtg. Background in purch. includ. very hvy contact w/subs & suppliers. Excelnt. knowl. subcontracts. Faml w/biddg procedures, requisitions & submission shop dwgs., etc. Prefer NYC (Manhattan) office. PW-7277, Engineering News-Record.

Registered Structural Engineer, B.S.C.E., age 41, 15 years experience in industrial work. Chicago area preferred, but may relocate. References and resume on request. PW-7276, Engineering News-Record.

Chief Estimator now employed desires connection in South—25 years experience building & heavy construction—best references—available reasonable notice to present employer. PW-7255, Engineering News-Record.

Purchasing Agent, field office mgr. 20 yrs. job site experience. All types building & heavy const. Cost conscious. PW-7250, Engineering News-Record.

Fld. Eng.—25, Survey Pty Chf., exp. hwys bdges, sub-div layout, office work, take off & drafting. PW-7259, Engineering News-Record.

Registered (2 states) Str. Civil. 30 years exp. 14 years supervision in bridges, buildings, hwys. Associate acceptable. PW-7185, Engineering News-Record.

Project Manager, entire supervision, contract admin., methods & equipment, estimates. 24 yrs. exp. hvy-constr. major projects U.S. & O.S. PW-7128, Engineering News-Record.

Structural Engineer and Architect—Registered in Illinois. Extensive experience. Position as Chief Engineer or partnership. PW-7193, Engineering News-Record.

Construction Supt. Heavy Construction. PW-4482, Engineering News-Record.

Retired Consultant, 55, very productive, adequate capital, seeks association with established engineering firm, New York City area. PW-7211, Engineering News-Record.

(Continued on page 88)

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

ENGINEERING DESIGN PERSONNEL

Highway & Bridge Designers, Highway & Bridge Draftsmen

Career opportunities for individuals interested in professional recognition ample opportunity for advancement based on merit, plus group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume To F. W. Ahern, Personnel Director

MICHAEL BAKER, JR., INC.

Consulting Engineers

Baker Building **Phone: SPruce 4-3010** **Rochester, Penna.**

Construction Economist

SRI has creative opportunities for an Engineer or Architect to analyze current business problems and develop new economic research programs in the residential and low-rise non-residential construction business. The work requires knowledge of building materials and designs and strong industry contacts. A graduate degree in Economics or Engineering plus 5 years of industry experience is required.

If these economic studies interest you, send your resume to W. E. Pedersen, Professional Employment Manager.

STANFORD RESEARCH INSTITUTE

Menlo Park **California**

SOILS ENGINEERS

Two engineers with MSCE (Soils Mechanics) Degree plus minimum of two years experience in design.
Four engineers with MSCE (Soils Mechanics) and no experience or BSCE with minimum of two years design experience in soils mechanics.
Will consider more experienced men for above or higher positions providing the previous experience has been in design of dams and hydraulic structures.
Please send complete resume to Personnel Manager.

HARZA ENGINEERING CO.

400 West Madison Street, Chicago 6, Ill.

CIVIL ENGINEER

Must be graduate with at least five years experience by large heavy construction contractor in Chicago. Estimating and quantity surveying under Chief Engineer. If suitable, opportunity to become Chief Estimator. Excellent opportunity as several of our executives have started with us in similar jobs. Please send resume to

P-7267, Engineering News-Record
645 N. Michigan Avenue, Chicago 11, Ill.

Senior Engineer

Experienced in electrical or mechanical design of hydro electric power plants.

Liberal relocation allowances. Send resume outlining experience and including your present and required salary to William A. Anderson, Technical Recruiting.

Bechtel
Corporation
220 Montgomery Street
San Francisco, Calif.

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS
TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.
MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.
MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.
We make this suggestion in a spirit of helpful cooperation between employers and employees.
This section will be the more useful to all as a result of this consideration.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.
330 West 42nd St., New York 36, N. Y.

UTILITIES ENGINEER

The City of Lakeland, Florida, Department of Electric and Water Utilities, is accepting applications for position of Utilities Engineer. Applicants must have degree in electrical engineering; registered or capable of being registered in State of Florida. At least five years experience in supervisory or technical staff responsibilities in private or public utility plant. At least ten years experience in engineering capacities of design and programming nature. Excellent opportunity. Salary $10,000 to $12,000. Retirement, leave and insurance benefits. Contact Emory E. Walker, Personnel Director, Civil Service Office, City Hall, Lakeland, Florida, or C. D. McIntosh, Jr., Director of Department of Electric and Water Utilities, City Hall, Lakeland, Florida.

REGISTERED LAND SURVEYOR

For work in northern Illinois. Minimum 5 years experience. Usual Benefits—Permanent.

MACCABEE, CAMPBELL & ASSOCS.
173 W. Madison St., Chicago 2, Ill.

HYDRAULIC ENGINEERS

Mechanical–Reports Specifications

Supervisory Design Engineer

Major design and supervision of design for dams, power plants, canals and other hydraulic works. Must be top man, minimum of ten years experience, capable of directing and producing work.

Hydraulic Design Engineers

Planning, investigations, design of dams, power plants, canals and other hydraulic works. Minimum of five years experience. Several positions available.

Mechanical Engineer

Design of large gates, valves, power plant mechanical equipment and related work on hydraulic projects. Some experience desirable.

Reports and Specifications

Engineer, Civil or Mechanical, for preparation of reports and/or specifications for hydraulic projects. Minimum of five years experience.

All positions are in our Denver office. Salary commensurate with ability and experience including excellent employee benefits. Submit complete resume with references and salary requirements to:

Tipton and Kalmbach, Inc., Engineers
831-14th Street
Denver 2, Colorado

• *POSITIONS WANTED*
(Continued from page 86)

Canadian draftsman 34, 15 years experience Municipal, Topo. Mapping. Desires permanent employment San Francisco area. Requires sponsor. John LeSueur, 1068 Burnaby St., Vancouver 5, B. C., Canada.

Resident Manager-Craft, Field Superintendent. 22 years supervisory and advisory experience industrial type construction domestic, Europe, Middle and Far East. Refinery, steam generating, pulp, atomic energy, nuclear research reactors etc. Capable administrator, personnel, labor relations, contract administration. Strong background piping, instrumentation, mechanical. Complete second Middle East contract. Available overseas only. PW-7309, Engineering News-Record.

General Supt.-Project Manager. 20 years experience heavy construction—expressways, toll roads, airports, dams. Can handle all phases work from preliminary bid investigation through final estimate. PW-7278, Engineering News-Record.

Civil Engineer, registered, BSCE, 30—desire position as City Engineer or Director of Public Works. Presently Engineer in Public Works. Experience in highways, bridges, municipal works, land development and surveys. Resume on request. PW-7339, Engineering News-Record.

34 year old college graduate, 10 years experience as Structural Ironworker, 5 years as Sales Engineer of construction equipment and industrial components desires interesting, challenging position in related field. PW-7315, Engineering News-Record.

Mechanical Supt.—25 yrs. experience in administrating, estimating, supervision & coordination of HVAC & heavy mechanical equipment installations for power plants, public & industrial bldgs. PW-7331, Engineering News-Record.

Superintendent or Resident, or Asst to same. 15 years top experience in heavy construction. References well known in field. PW-7296, Engineering News-Record.

Engineer, 35, married—family, B.S. and M.S. in C.E., Professional license, ten years experience Field Engineering and supervision with both general building and mechanical contractors. States and Foreign, desire association with small engineering or contracting firm with possibility of part ownership or profit participation. Have capital for investment. Write PW-7292, Engineering News-Record.

Civil and Structural Engineer—seven years experience in design of highways, bridges, and petrochemical plants. Well versed in soil mech. and materials testing. Graduate work done in structural engr. Experienced in estimating, specifications writing and technical reporting. Age 33, desire location in Southeast or East Coast region. PW-7293, Engineering News-Record.

Highway Designer—44, experienced. Engineering background. Presently employed. Prefer South or Southwest. Would consider foreign contract. PW-7290, Engineering News-Record.

Land Surveyor, 34, Reg., exp. field & office. Desires position with growing firm needing capable, responsible and willing young men. Consider any field where surveying background will be of benefit to both parties. PW-7320, Engineering News-Record.

Graduate Engineer 42—Architectural—construction superintendent. Project engineer, manager for industrial and commercial projects. Foreign or domestic work. Excellent knowledge Spanish. Available November, resume on request. PW-7312, Engineering News-Record.

Electrical Construction Superintendent with 25 years experience in electrical design and construction work in South America, Carribbean, Near, Middle and Far East desires foreign position. PW-7304, Engineering News-Record.

Project Engineer—P.E.—28 years diversified experience in planning, design and construction supervision of waterfront structures, bridges, industrial and power plants. Presently employed. Location West or East of US. PW-7308, Engineering News-Record.

Construction Engineer Executive, age 44, excellent health, BSCE, registered engineer several states. Liquidating own eastern company. Operated 7 years, industrial-commercial projects, large national accounts; mostly negotiated contracts. Know all phases, top negotiator, and contract closer, can open any door. Salary not major consideration. PW-7336, Engineering News-Record.

BARGE MOUNTED WHIRLEY

1—Model 685 American Steam Whirley Crane, mounted on a 120'x30'x7'-6" steel barge. Crane equipped with a 9"x10" American 3-drum steam hoist, a 7"x8" American steam swinger, and an 85 HP steam boiler rated at 135 lbs. Boom 100'. Barge deck and bottom ⅜" plate, sides 5/16". There are 2 water-tight and 2 open-type bulkheads. Oil and water storage—10,000 gal. each.

PRICE at Portsmouth, Ohio.....$30,000.00

Contact

GUY F. ATKINSON COMPANY

10 West Orange Ave. So. San Francisco, Calif.

Phone: PLaza 6-0300, Ext. 279

• *BUSINESS OPPORTUNITY*

Self-employed professional Quantity Surveyors, Estimators and Appraisers needed to service clients in their local areas. Construction Survey Coop., 101 Park Ave., N.Y.C.

WANT TO PURCHASE
Construction or Engineering Firm

Entire interest or working control in a large well established construction company or engineering company with a successful record of having completed large-scale projects. We will pay cash for this acquisition and give to present management a profit participating management contract for a period of years. We can furnish excellent bank reference and we are placing this advertisement as principals.

Send three year profit and loss statement and balance sheet, plus business description to

BO-7216, Engineering News-Record
Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CONSTRUCTION SUPERVISION

Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.

National Schools of Construction
Est. 1952
Satsuma, Florida

WANTED
200 H. P. Electric Motor
230 V. D. C. Low speed preferred.

W-7326, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED
3 Yd Crawler Mounted Backhoe

R. ZOPPO CO., INC.
842 Providence Hwy.
Norwood, Mass.

WANTED
GOOD USED
5 DRUM HAULING GEAR
for 24" Dredge.

W-7325, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

750 KVA GENERATOR

One 750 K.V.A. alternating current generator complete, consisting of the following:

1 Type JS-6-t Cooper-Bessemer Diesel Engine No. 4282, size 13 x 16, RPM 450, H.P. 865, with Buck Supercharger, with water cooling system and oil clarifer.

Generator by Elliott Company #2185, Frame 6112, Design D 342, 750 K.V.A., 8 P.F., 600 Kilowatts, 240 Volts, 3 phase, 60 cycle, 1800 amps per terminal, 450 RPM, Field Current, 60 amps, 125 volts Continuous rating, 50 degrees C Temperature Rise.

Switch Gear by Elliott Company, M.O. #6736, Serial #1108, Voltage 240, Weise 3 K.V.A. 750, 3 phase, 60 cycle.

This unit has been used for stand-by electric power and is in excellent condition. Can be test run and inspected.

THE JACOBSON CORPORATION
P O Box 7594 (Portlock Br.)
Norfolk 15, Va.
Telephone 543-2066

U.S. ARMY EE-8

Telephone fully reconditioned at 2 for $35.00. Any number can be used on same line. Wire 1¢ per ft. or $35.00 per mile. Write for complete telephone list.

TELEPHONE ENGINEERING CO.
Dept. ENR-8241 Simpson, Pa.

FOR SALE

1—Erie Strayer Automatic Central Mix Plant with one 3 c.y. Smith Tilting Mixer, aggregate elevator, 800 barrel ground storage silo, 100 kva (Cat.) diesel generator, forced hot oil heating system.

H. I. LEWIS CONSTRUCTION COMPANY, INC.
MIDDLETOWN, PA.—PHONE WHitney 4-4654

FOR SALE
NORTHWEST MODEL 6
CRAWLER CRANE

1½ c.y. 25 ton capacity Cat. diesel engine; 50' boom
Rudomatic tagline & 1 c.y. Erie digging bucket
Location N.Y.C. Phone Gibraltar 8-8448 or write

FS-7338, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

WANTED
Used 50C Vulcan
STEAM HAMMER
State price and condition.

W-7341, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FOR IMMEDIATE SALE

LOCATED TRINIDAD

2 Steel Diesel Tugs, Built 1955, Dimensions 42'x13'x6'6", Engine GM 610-220 HP

LOCATED ECUADOR

Steel Diesel Tug, Built 1948, Dimensions 47'x12'x7', Engine GM 671-170 HP

Steel Water Barge, Built 1954, Dimensions 60'x30'x6', Capacity 140 tons

ALL EQUIPMENT IN EXCELLENT CONDITION

FS-7137, Engineering News-Record
645 N. Michigan Ave., Chicago 11, Ill.

PILE DRIVING EQUIPMENT RENT OR SALE

DRIVING CAPS ■ STEEL SHEET PILING

DROP HAMMERS ■ HOISTS & DERRICKS

VULCAN and McKIERNAN-TERRY
PILE HAMMERS and EXTRACTORS

BOILERS ■ *MANITOWOC CRANES*

CONMACO, INC.

• Kansas City, Kansas • 804 Kansas Avenue
Phone DIexel 1-3930
• Chicago, Illinois • 327 North Bell Avenue
Phone CHesapeake 3-9354

For Sale: DRAGLINES—SHOVELS—CRANES
All makes and models, ½ yd. to 35 yd.
EUCLIDS: Rear, Bottom Dumps and Scrapers
Other equipment available not listed above
William Lubrecht, III Construction Equipment
311 W. Diamond Avenue, Hazleton, Pa.
Gladstone 5-4041 5-0253

MANITOWOC Undercarriage—Model 3000 Includes king pin, car body, 12'-4" crawlers and 34" pads. Good Condition.....$3,500.00

CATERPILLAR D-13000 Diesel Engine. Good running shape. Asking.....$3,000.00

ANDERSON EQUIPMENT COMPANY
P.O. Box 427, Bridgeville, Pa.
(Pittsburgh area)
Phone: LEhigh 1-6020

10 MACK DUMPS

MODEL LRVSW

24 yard capacity—Cummins 400 HP engines—torque converters—power steering—1600 x 24 tires, front & rear. In excellent condition. Location: 6 in Minn., 4 in Kansas City. Also 2 Euclids—35 ton 4FFD's in very good condition.

ERNIE RIEKE EQUIPMENT COMPANY
3311 Merriam Lane--Kansas City 3, Kan.
Telephone—days, HE 2-1601;
nights, CO 2-7733

FOR SALE

a. Four Babcock & Wilcox Marine Type Boilers, 1634 sq. ft. heating surface rated 250#. Two Mayflower burners each unit. Now being removed from former U. S. E. D. Dredge.
b. 1635 H. P. Skinner "Uniflow" 6 cyl. 16" x 16" Vertical steam engine.

FS-7327, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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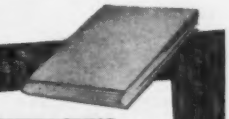

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Editorials

Honesty is Best Policy

WHATEVER THE FUTURE for foreign aid as it is now being shaped by legislation and by Inter-American accord, the importance of spending aid money through the hands of capable people both at home and abroad cannot be emphasized too often. And a fundamental measure of capability is the ability to operate in a manner that is above suspicion.

There should be no more cases like the one brought out in a recent Congressional investigation of an aid mission official selling a used car to a contractor who didn't need the vehicle, but who could benefit from the official's good will. Such sordid dealings badly damage our prestige with the people we are trying to help.

Much of the money spent in aid programs will continue to go for construction. U.S. engineers and construction men who go abroad to do this work must be the very best we can send. So, too, must the military or civilian administrators. The foreign aid program is far too important, and costly, to be run by any but the best available talent.

Forcing the Columbia Issue

BRITISH COLUMBIA'S EXPROPRIATION of two private corporations, the B. C. Electric Co. and the Peace River Power Development Corp., has set off a flurry of head scratching among theorists of all persuasions. While they ponder the full political, economic and social significance of the seizure, the construction prospects are worth considering.

By launching the Peace River project ahead of the Columbia project, B. C. Premier W. A. C. Bennett may have taken his only chance of getting both projects going simultaneously—assuming he really wants both right now. He has stated repeatedly that the province needs both. However, the Peace project would have had a rough time getting off the ground if the Columbia job had begun first.

As Number One, the Peace project can be justified on the basis of British Columbia's own short-range and long-range needs for power at home. Whether the project could have been made Number One simply by licensing it rather than expropriating it is, of course, a moot question. The fact is, however, that the immediate need for power, coupled with the B. C. Energy Board's conclusion that public power from the Peace would cost one-third less than private power, gave the Premier a strong case for nationalization to present to the legislature.

As Number Two, the Peace project would have had no early domestic demand in prospect that the Columbia could not satisfy. And its backers, whether private investors or the provincial government, would have no persuasive arguments with which to convince the Canadian government to unbar the door to the U.S. market.

The Columbia project, on the other hand, has an important factor in its favor, even as Number Two: support in Ottawa. The Columbia joint development agreement hammered out last December is regarded by both the U.S. and Canadian governments as a prize hard-won through years of cooperative engineering study and diplomatic horse trading. Moreover, in light of the wide acclaim the agreement received in both countries and of the U.S. Senate's quick ratification of the resulting formal treaty, Ottawa feels obligated to expedite ratification by Parliament.

However, Ottawa officials still strongly oppose power export, the major concession sought by Mr. Bennett in return for his support of Columbia development. They feel that large-scale export, essential if both projects go ahead together, would build a momentary prosperity at the expense of future Canadian capacity to produce goods; that when the day of Canada's own need for the power came, she could not in conscience pull the switch on U.S. communities that might have become dependent on the power.

Whether Ottawa's desire to get on with the Columbia plan will prove stronger than its aversion to power export may be the key question. However, it is possible that Mr. Benentt doesn't really want to build the projects simultaneously, but is simply using the Peace to squeeze lesser concessions out of Ottawa before giving in on the Columbia. The expropriation in that case was a convenient weapon that also happened to fit in with Mr. Bennett's avowed sentiment for state control of power. It puts B. C. in firm control of development of the Peace either now or in the future.

Win, lose or draw, Mr. Bennett has posed the Peace-Columbia questions in a way likely to bring some kind of a quick answer.

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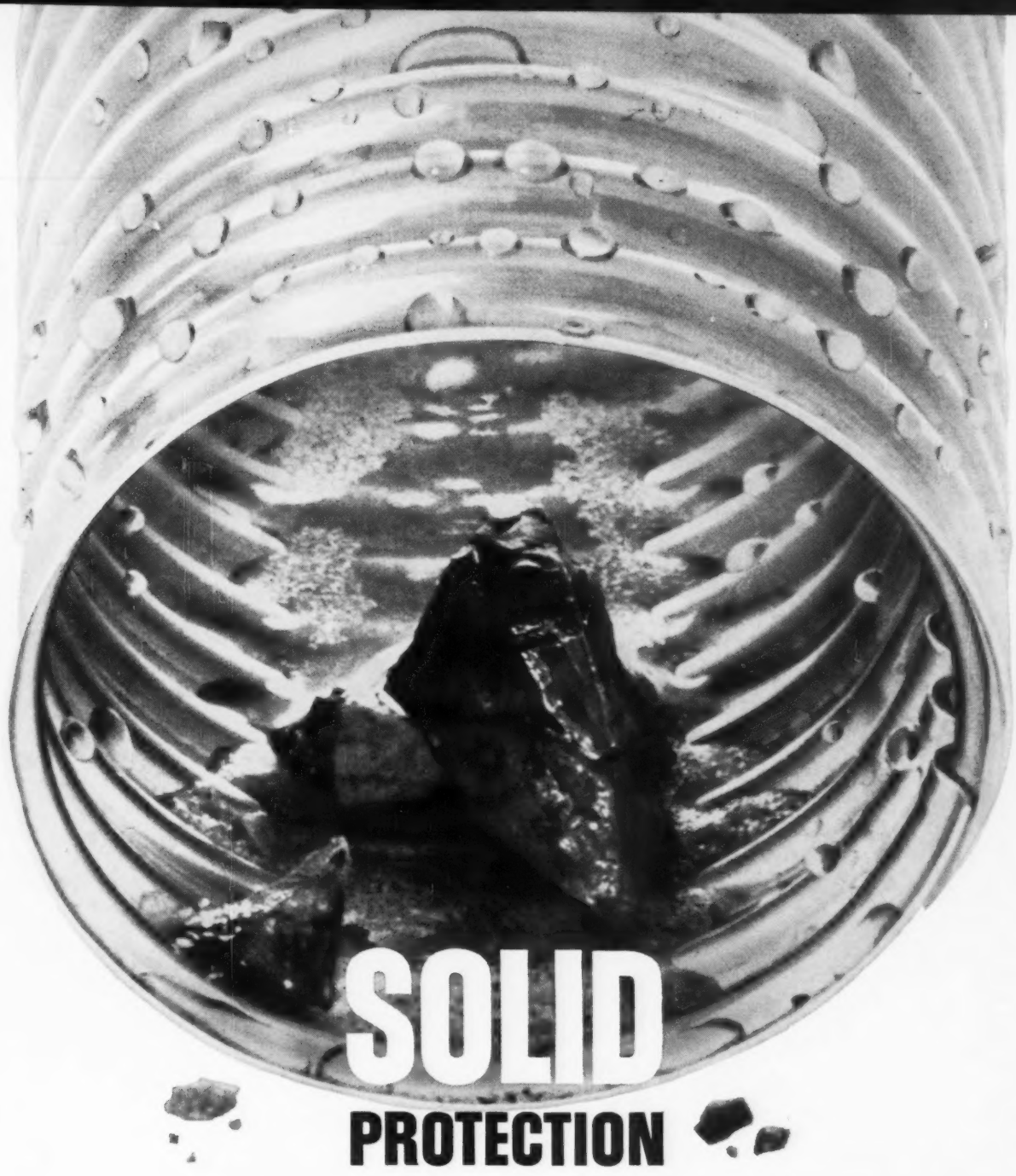

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